The Veterinary Record

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

No. 43. OCTOBER 23, 1937. Vol. 49.

A Few Notes on Anthrax from the Administrative Standpoint*

L. E. PERKINS, M.R.C.V.S.
Chief Veterinary Officer, Cornwall County Council

When I was asked by our Secretary to open a discussion on some subject connected with local authority administration it occurred to me that as the public health side had received all the prominence of late, an aspect of the Diseases of Animals side might be of interest to you. For this reason I make no apologies for the title I have chosen. As you are all aware, the control of anthrax is laid down under the provisions of the Anthrax Order of 1928. This Order, amongst other things, imposes definite duties on the owners of animals and on veterinary surgeons to report all suspected cases, and also on certain veterinary surgeons appointed as veterinary inspectors to ascertain whether death was in fact due to anthrax.

The symptoms and *post-mortem* appearances which are to be found in the preface to the Diseases of Animals hand-book may be true of the typical case but in my experience there are more atypical than typical cases. It becomes necessary, therefore, to regard all cases of sudden death or death following a short illness of a few hours' duration, where the cause of the illness cannot be definitely determined, as suspected cases. The time taken in making and examining a smear will at least give a feeling of security even if it does not on some occasion prevent one getting into an awkward position.

Most of the confirmed cases of disease are in cattle but it is seldom that an owner notices any symptoms except in dairy cows, probably owing to the fact that they do not come under such close observation. In the cow, however, I have frequently, after careful enquiry from the owner, been able to ascertain a few symptoms. In most cases there is a marked diminution in the milk yield at the last milking but in others this diminution is slight or may be non-existent. There may be loss of appetite and part of the concentrates are not cleared up; sometimes there would appear to be either a difficulty in swallowing or a soreness of the mouth and the animal chews the food round the mouth and allows part to fall back into the trough. Other animals show a definite twitching of the abdominal muscles; frequently the eye is staring and often the head is pushed slightly forward and downward. Others, again, show a twitching of the flanks; the animal suddenly stops feeding, throws up the chin and appears to be listening to something and then commences to feed again. During the time of listening there is frequently a slow wink. The affected animals often show a certain amount of sluggishness when being driven into the buildings for milking. The cases of acute abdominal pain appear to be rarely observed and if this is present it appears only in the late stages and just prior to death. In the horse and pig the disease usually runs a sub-acute course with swelling of the throat but in three cases in sows recently dealt with, where the deaths occurred within the space of a week, the disease was acute and the animals appeared normal within an hour or two of death taking place. In these cases a blood smear demonstrated the presence of the organisms in large numbers whereas the gland smear was negative.

The external appearance of the carcase frequently fails to reveal the presence of that dark tarry discharge from the natural orifices. Often there is no discharge at all, and in several cases recently there has been a discharge of normally coloured blood from the anus and vulva sufficient to run down the cowhouse channel and well out into the yard, suggesting on first appearance that death was due to haemorrhage. One may see signs of struggling or, on the other hand, the animal may be lying in a natural position as if death occurred during sleep. Occasionally one meets a case in which the animal is affected with anthrax but where the actual cause of death is from strangulation by the chain or dislocation of the cervical vertebrae. Usually cases in the other domesticated animals follow initial outbreaks in bovines and they are frequently due to eating contaminated food or part of an infected carcase. The length of time between infection and the onset of symptoms varies considerably, but in my experience is usually between 7 and 14 days.

Diagnosis in the bovine and ovine species must, in all cases, be made by the examination of a smear of blood usually taken from an ear

*Presented at a meeting of the Western Counties Division, N.V.M.A., at Bodmin, June 17th, 1937.

vein and preferably the under ear when the carcase is lying on its side, or from a vein near the fetlock, and in other animals where the disease is not usually septicaemic, from a smear taken from the sub-maxillary lymphatic gland. In these latter cases a blood smear may also be taken as a safeguard for if this had not been done in the cases mentioned above a positive diagnosis would not have been made. There appears, on the part of some people, to be a tendency to take the smear from the straw-coloured exudate or the surface of the tissue surrounding it instead of making a deeper incision and taking it direct from the cut surface of the gland itself, with the result that the organisms are not found or are present in such small numbers that they may easily escape notice. The smear must be allowed to dry and then fixed by gentle heat, but at no time should the heat applied be so great that the slide cannot be placed on the back of the hand without discomfort. Too much heat tends to distort the organism and thus increases the difficulty of diagnosis. Staining is by means of methylene blue and where blood films are being examined the M'Fadyean reaction, which consists of a purple coloration in place of the normal colour, is practically constant. One may get a somewhat similar but not such a marked colour change if, by accident, muscle juice gets mixed with the blood during the process of obtaining the smear. This may occur if the quantity of blood in the vein is insufficient and pressure is applied in an endeavour to get more blood to the point of incision. Occasionally one gets a definite green tinge in negative cases and it is then usual to find, on microscopical examination, long unencapsuled, convex-ended putrefactive bacilli. In gland smears the M'Fadyean reaction is absent unless there is blood infection. On microscopical examination one finds the typical square-cut or slightly concave-ended bacilli, usually in chains, with a well-defined capsule. The only organism with which this may be confused is a putrefactive bacillus, only occasionally met with, which is slightly larger, has convex ends and a capsule not so well marked as in anthrax. Another factor which aids in differential diagnosis is the absence of the M'Fadyean reaction. It should be noted that in gland smears the capsule is frequently less pronounced or may be entirely absent and the bacilli may be in small chains of three or four or as single organisms. They are also very much less numerous and patience in searching for them may be required.

In negative cases or inconclusive positive cases the usual laboratory procedure is to examine smears taken from the submitted swab stained by methylene blue, by the Gram method and also by one of the Romanowsky stains—usually Wright's stain which brings up the capsule when present. If the swab is then still negative it is used to inoculate an agar slope, to inoculate a guinea-pig by scarification and finally placed in a tube of broth. The agar slope and broth are incubated for 24 hours and smears examined microscopically from both. If still negative both tubes are heated to a temperature of 70° C. and maintained at that temperature for a sufficient time to destroy all non-sporulating organisms, and are then re-inoculated on to agar slopes and incubated for a further 24 hours. The character of the growth is noted and the smears examined as before. If still negative and the guinea-pig remains alive the case is marked off as "not anthrax."

I have found that in going to investigate a case of suspected disease the following equipment is necessary. A microscope with immersion oil, slides, spirit lamp, scalpel, forceps, cotton wool, disinfectant, official containers for positive cases, a small bottle of 1 per cent. methylene blue, a 6 oz. bottle of water for washing the slide and some blotting paper. The slide should be made and examined on the site if possible, otherwise in a shed or hut at the farm buildings away from anything which can be contaminated. I am of the opinion that the use of the farmhouse kitchen for the purpose of making and examining the slide is most undesirable. At night or in bad light the headlamps of a car provide quite a good light for microscopical work.

In confirmed cases of anthrax the carcase must be disposed of in such manner that the chances of subsequent infection are reduced to a minimum. Probably the best method is first to plug all the natural orifices and then load it into a special container constructed so that leakage cannot take place and where efficient disinfection can be carried out after the removal of the carcase. It is then transported to a destructor where it can be destroyed either by burning or by subjecting it to steam under a sufficient pressure and for a long enough period to destroy both the bacillary and sporulated forms of the bacillus. This method is not often possible and one then has to arrange for the removal of the carcase in the best manner possible, according to the facilities available, to a convenient place where it can be destroyed by cremation, using a deep pit for the purpose, so that any liquid which may ooze out does not escape and contaminate the surrounding land. I am not in favour of burial except where either of the above methods is not practicable. If in any particular case this method is necessary a place must be selected where contamination of water supplies cannot occur nor any contamination of drainage, especially if it is used for irrigation purposes. The pit must be dug to such a depth that when the carcase is placed in it no part of the carcase is less than six feet from the surface. This

means that in the case of cattle, providing that one can guarantee that the carcase will lie flat on its side, the minimum depth of the pit will be nine feet. It is also advisable to cover the carcase well with quicklime.

The cleansing and disinfection of the premises is most important. Any patches of blood on the pasture, or blood-stained or recent faeces should be looked for and if found the ground should be skimmed and the whole burnt. Recent dung, bedding and the remains of food, should also be burnt and the premises well disinfected. If available a painter's blow lamp can, with advantage, be used over the parts likely to be contaminated; otherwise the use of a solution of hot washing soda and a scrubbing brush between the preliminary and final disinfection is desirable. In cases occurring on pasture land where the supposed contamination is not very extensive a layer of straw may be spread over the part, saturated in paraffin and burnt.

I suppose the point which causes most concern to us in dealing with a confirmed case is the method and origin of infection. Although it is generally assumed that the method of infection is by way of the alimentary canal yet experimentally it is possible to feed food infected with *B. anthracis* for considerable periods to animals without producing a heavy mortality. Further, it is possible to inoculate animals with anthrax culture by the intraperitoneal method without causing any obvious disturbance, providing that care is taken not to injure the skin at the point of inoculation. It has been found that symptoms of the disease are produced by inoculation of the tongue, also by the feeding of material contaminated with *B. anthracis* and mixed with bristles or other sharp substances, which have an irritating effect on the alimentary tract. One is unable to state the exact conditions necessary for the setting up of symptoms, for although it has been claimed that the skin is the only tissue susceptible to *B. anthracis*, later investigators consider that any tissue with a limited blood supply is equally susceptible to infection. There is also reason to believe that *B. anthracis* may gain admission to the blood stream and circulate in it without producing any symptoms but that in the blood the anthrax bacilli are rapidly destroyed by phagocytosis. If, however, the organisms gain access to injured tissue anthrax may result. It would appear that some unknown additional factor is necessary before an active infection can occur.

The official figures published in the Reports of Proceedings under the Diseases of Animals Acts for the years 1919 to 1934 inclusive, show that there were 7,844 confirmed cases, of which 1,497 occurred on premises where a previous case had been dealt with during the preceding five years. Of the remaining cases 85·7 per cent. were suspected to be due to feeding material or artificial manure, 2·2 per cent. to litter or tanyard effluent, 1·5 per cent. to a previous unexplained death or to animals eating infected carcases or offal, and 10·6 per cent. unexplained causes. Although it must be admitted that contaminated feeding material is probably a common cause of infection, it would appear that one is often inclined to jump to the conclusion that because the animal had been fed on cake the cake must be the origin of disease and no further enquiry is made into any other possible origin. When one looks at the figures given above it is seen that 19·1 per cent. of the total outbreaks were on premises where there had been a confirmed case during the previous five years, yet no case is recorded of infection due to an outbreak having occurred on the same premises more than five years previously. There does not appear to be any reason to believe that the maximum period of infectivity of land is under five years and there are good grounds from practical experience for believing that the organism can remain for a very considerable period without losing its vitality.

It is assumed that the figures quoted were compiled from information obtained from the reports of the veterinary officers forwarded at the time of diagnosis, when the disposal of the carcase and the despatch of material and forms is uppermost in the minds of the persons concerned and when the owner is worried and often incapable of concentrated thought. If one interviews the owner a few days later, after he has had time to think things over, one frequently gets a considerable amount of information and by a process of elimination it is often possible to ascertain a probable cause not previously thought of and which in some cases is backed up by subsequent deaths. One may get a history that the affected animal was a gluttonous feeder and when out, would go to places not usually frequented by other stock in search of food. Another common history is that the affected animal was partial to newly exposed earth and the owner had noticed that recently it had been seen eating some. The number of cases is surprising, too, in which one finds that within the previous month there had been cleaning out of ditches, turning up of land for drainage purposes, disturbing old earth hedges or otherwise disturbing the soil in places where the stock have had access. The following cases were recently dealt with where these factors coincided.

A cow died from anthrax and after careful questioning there appeared to be no definite cause, suspicion falling on the feeding cake as the most probable origin. About two months later a second animal died and in the meantime the feeding stuff had been changed. On investigation it was found that two pastures were

common to the two outbreaks; one was an old permanent pasture and the other had been seeded out one year previously and the cows turned into it a month before the first outbreak. In this pasture, near to the farm buildings, there was a small triangular piece of land in one corner which was waste and had been used just prior to the first outbreak to bury rubbish. Marks showed that the cattle had been over it and the owner recollected that the two cows affected were frequently trying to break down the earth hedges and, if successful, licking the earth. It would appear feasible that these two cows had been at the earth disturbed by the digging operations and as the corner in question would have been a suitable and convenient burial ground for dead animals the disturbance of the soil may easily have brought latent infection to the surface.

In another outbreak a small triangular field was definitely involved. A few years ago this field was divided by an earth hedge which was knocked down, levelled, and the disturbed soil covered over with turf. Up to this time there had not been a known case of anthrax in the field, but after an interval an animal died of anthrax and shortly after a second case occurred. The field then passed into the hands of a new tenant who knew its history and ploughed it out. In the third season he put in roots and when he took them up the crop from the lower third of the field was carried direct to the buildings, the upper third was put into one burrow and the middle third, which contained the part where the hedge had been torn down, in another burrow. The roots were fed during the winter and early spring—the lot taken into the buildings first, followed by the lot from the top of the field, and finally the middle lot. Ten days after commencing on the middle lot four animals, comprising two bulls, a cow and a yearling, which had been receiving a daily ration, died from anthrax within the space of 24 hours. Five days later a heifer which had not been in contact with the preceding animals in any way died from anthrax and the only thing in common was that this animal had had one feed from the middle lot ten days previously. The roots were all destroyed and no further outbreaks have occurred on this farm during the last twelve months. The field has been sowed down again and is being used exclusively for poultry.

A further interesting outbreak occurred in August last when a cow died from anthrax. No further developments took place until November when another cow died, followed three days later by a neighbour's bull. Four days later a further cow died and the next day another cow was found dead. In December and the beginning of January three sows died within seven days from acute septicaemic anthrax, in February one more cow died and another death occurred in March. This farm is scattered and consists of a set of buildings with an orchard, two low-lying fields in which the only drinking water is found, and a further series of fields on higher ground. One of the bottom fields was boggy and practically useless and as a consequence it was decided last summer to try and drain it. For this purpose drains were cut about two feet wide and 18 inches to two feet deep. It would seem probable that infection was disturbed and brought to the surface by this digging and that, as a result of the continual movement of the cattle from one part of the farm to another three or four times a day for watering, the infection was subsequently carried by infected stock to the other fields. The bull had not been with the cows as far as was known but there seems to be no doubt that it had been over the fence into this swampy field and then gone back without the owner's knowledge. Besides the animals which died, all of which with the exception of the pigs showed symptoms, there were other animals which showed similar symptoms suggesting that they were also affected, but which subsequently recovered. No further death has occurred since the whole of the stock was vaccinated.

In another case the origin appeared to be feeding material but on talking things over with the owner a few days later he suddenly remembered that about ten days before this cow died his dogs had been away for some hours and one of them came back with a limb bone on which was some decomposing meat. This he took away and put on the top of the hedge while he went to get a spade to bury it and on his return he found the cow, which subsequently died, licking it. This, of course, may have been a coincidence but, on the other hand, it may have been infection brought back from an unreported case of anthrax which had been shallowly buried. Investigations into the origin of the bone were unsuccessful.

I am quite convinced that many more outbreaks than we imagine are due to latent soil infection which is brought to the surface either by digging, ploughing up of old pastures and the disturbed earth being fed with roots, or to the action of worms bringing infection up to the surface. It would also appear that some types of soil harbour infection for longer periods than others and it has been stated that marshy land tends to retain infection.

The use of vaccine in outbreaks where one gets recurrent cases is most useful and should be considered. In the recurrent outbreak mentioned above the use of Pasteur's double vaccine was very successful. Inoculation is by the intradermal method with an interval of ten days between each dose. There is a marked systemic disturbance about 48 hours after the first inoculation. In milking cows there is

practically a total loss of milk, the site of inoculation is red and painful, the respirations are accelerated and the animals go off their feed and stand with the head down and outstretched. These symptoms pass off gradually within 24 to 48 hours and the animals become normal. The site of inoculation shows a necrotic patch which scabs over and later there appears to be a stimulation of the hair follicles over the part. Very little reaction seems to occur after the second inoculation. Immunity is obtained in about two to four days and lasts for twelve months. There is also a single vaccine but I have had no experience with it. A new vaccine which is being used extensively in Italy under the name of "Carbozoo Vaccine" appears to be successful. It aims at producing a localised reaction with the formation of oedema whilst retarding the spread of the organisms from the site of inoculation and delaying the absorption of their poisons. For this purpose the bacilli are suspended in saponin. I am unaware whether it has been used in this country or if it can be procured. In connection with vaccination it is advisable to take the temperatures of all the animals before inoculation. In the first batch which I did recently one animal, apparently normal, showed a temperature of 106° F. and was not included. Within a few hours it was showing symptoms of anthrax and was so ill that the owner moved it into a position where it would be easy to pull the carcase out, but after three days it recovered.

The use of anti-anthrax serum is seldom called for as the immunity conferred is of short duration. It might possibly be indicated where there have been several deaths in fat cattle and where one wished to protect them for a short period prior to slaughter.

In conclusion, may I remind you that any anthrax material sent for confirmation must be forwarded in such a manner that it complies with the Post Office Regulations, and should consist of two unstained slides and a swab. A note giving the name and address of the owner of the animal, the premises where the carcase was seen, the type of animal and the material used for making the slide and swab, should be enclosed with the material. All other letters and reports must be forwarded under separate cover and not enclosed or attached in any way to the specimen container.

Discussion

The discussion on the paper was opened, in the following terms, by Mr. R. R. Willing, M.R.C.V.S., Divisional Inspector of the Ministry of Agriculture and Fisheries.

Being concerned with this subject in a similar capacity, it is to be expected that the essayist and I should view it from a similar angle, and I should like to compliment my friend and colleague on his practical paper and for the opportunity he has thus afforded us of refreshing our memories and expressing our views on the oldest known disease. In recent years anthrax has perhaps received undue attention of this kind—at least as it is encountered and dealt with in this country.

Mr. Perkins seems to have dealt adequately and very usefully indeed with facts regarding symptoms, *post-mortem* appearances, and diagnosis, and I find myself in agreement on practically all his points. I will endeavour—as far as I can briefly, and within the somewhat limited scope permitted by the title of the paper—to augment rather than criticise.

With regard to diagnosis and differential diagnosis, quite a lot more might have been said without serving any useful purpose from the administrative point of view. If an animal becomes such a danger as to void organisms, death is practically inevitable and a definite diagnosis is then possible; if, on the other hand, the animal recovers from slight or mild infection it is equally probable that it would be of negligible danger to its immediate contacts, and the diagnosis would be of little more than academic value—insufficient to justify useful intervention as regards preventive measures.

In addition to the generally recognised methods of spread and probably for short periods and on particular occasions, I think blood-sucking flies may become transmitters of infection, even—though very uncommonly so—in this country. The circumstances connected with a group of outbreaks which occurred a few years ago on three adjoining farms seemed to support that belief. A mare with a local mammary gland lesion was believed to have become infected in that way.

It is generally agreed that treatment in the form of administration of medicine is unlikely to alter the course of the disease and that it is certainly attended with danger, but it is a good practice to isolate any affected animals—in such a manner, if possible, that the carcase can be conveniently dealt with if death occurs. If gloves, which can be destroyed, are not available, sacks, in which to envelop the hands of anyone who has to touch the carcase, are useful and can be burnt. In very water-logged soils where, after removal of as much of the contaminated material as possible, the area is still regarded with apprehension, it is considered a good plan to allow a quantity of quicklime to become slaked and to encourage generation of its maximum heat over the spot. Hedge prunings are sometimes available in large quantities for burning over contaminated surfaces.

On vaccination there will probably be more variety of opinion than on any other aspect of

the subject. I can say nothing of it from experience but will venture to hope that an undue degree of optimism may not be derived from Mr. Perkins' remarks and his experience of this treatment. In many outbreaks the circumstances seem to indicate the co-operation of some adverse factor the nature of which is not understood, and it occurs to me that some such factor might well be in operation at the time of the injections, and be just sufficient to convert the normal vaccine into a lethal dose for a particular animal; in which case further infection would possibly be liberated to outlive any immunity gained in the remaining stock, and from the administrative standpoint the risk would not have been justified. There is also, of course, the possibility that an animal already may be infected, in which case the chance of natural recovery would be prejudiced, and against which the taking of the temperature beforehand would not be an adequate safeguard. In this part of the country outbreaks in which vaccination would be justified are rare, and the question as to whether the unavoidable risk should be taken must depend on the circumstances. Perhaps it should be considered seriously only in cases where insurance is either refused or prohibited by high premium rate.

I agree with Mr. Perkins' remarks regarding statistics in so far that hard and fast conclusions should not be drawn from them, especially with a disease like anthrax where it is on record that the spores have been known to have survived for over 18 years; figures given by Begg, however, indicate—significantly, I think—that about twice as many outbreaks occurred in a particular district during the non-grazing period as during the grazing period: also it is well known that the incidence is much higher in those districts where artificial feeding is high, although, of course, it must be recognised that the number of recrudescences would be correspondingly higher in those districts, and a thorough investigation will often indicate which are which.

In respect of certain districts where the incidence is high the Ministry has made Orders empowering the local authorities thereof to make regulations designed to control the disease by way of compulsory notification of illness and deaths of cattle, with certain limitations.

Mr. C. V. Watkins, continuing the discussion, said that he was afraid that he could add little as regards practical experience with that disease. He could, however, recall one unusual case in a horse. This was seen late at night and had a crepitant swelling extending up both hind legs and creeping up over the hind quarters, a temperature of 107·5° F. and no other obvious symptoms. An early visit was made next morning, when it was found dead and in process of being removed by the knacker. Anthrax was confirmed in this case.

He had been looking over some references to this disease in the literature, and these showed what a very complex disease it really was. Authorities' views varied on almost every aspect of the disease. Recent experiments carried out by Fröhlich rather tended to discount Besredka's theory as to the natural immunity of certain tissues other than the skin to anthrax. This worker had been able to infect rabbits by the intravenous, subcutaneous, intrapulmonary, intraperitoneal and intracerebral routes. He took great care to avoid skin infection in all these experiments, but he suggested that the disease could only be set up under certain favourable conditions. Subcutaneous infection was established by a glass ampoule containing bacilli being broken about four days after its introduction. The irritation set up by a foreign body probably liberated contributory factors to the infection because, if the ampoule was immediately broken after insertion, spontaneous leucocytosis with phagocytosis of the bacteria occurred.

In Holland, where this disease was fairly widespread, especially on the low-lying reclaimed land, DeMoulin found that some of the losses attendant on vaccination might be caused through permanent damage to nervous tissues. Recovery from an acute natural infection might leave similar damage in its train, and this author suggested that relatively avirulent anthrax bacilli might then produce fatal results in such animals.

The carbozoo type of single vaccine had been mentioned by several speakers. Mazzuchi reported his preparation of and treatment with this vaccine at the Twelfth International Veterinary Congress. A marked local reaction was set up in a few days and resistance to virulent bacilli was provoked in about ten days, the test bacilli disappearing from the site of inoculation by phagocytosis and bacteriolysis. In the discussion upon this paper Dr. Eichhorn agreed that this form of vaccination had proved efficient in his country, where half a million doses had been used without one death attributable to vaccination having occurred. The significant sentence in his remarks was that these vaccinations had been carried out in infected localities.

As regards other factors causing a higher mortality from this disease, some Dutch investigators had suggested that barley might be a contributory cause through injuries, not only in the mouth, but in the lining membranes of the intestines. In other instances rough grasses, particularly horsetails, as opposed to the softer grasses, had been blamed for a higher incidence of the disease on certain pastures.

Colonel Head, stating that there were difficulties in connection with the symptoms shown by affected animals, mentioned some recent cases as follows: (1) A cow was dull for four days with a high temperature and no other symptoms. She died of anthrax. (2) A cow calved and bled a little but appeared otherwise normal. She died the next day from anthrax. (3) A cow showed diarrhoea for two or three days, then the faeces contained blood. She died of anthrax as also did (4) a cow which died after passing blood-stained faeces. Some of the in-contact animals ran temperatures as high as 107° but recovered. Did they have anthrax?

He agreed as to the danger of soil infection. He knew of a farm where 40 years ago a number of *post-mortem* examinations of anthrax cases were made in a certain field. The disease disappeared until two or three years ago when it re-appeared after the tenant had pulled down a hedge at the place where the *post-mortem* examinations had been carried out. He thought the disease was more common than one might

be inclined to think. There was no means of knowing how many animals recovered.

Mr. F. T. Harvey said it was true that we did not know how many animals were affected with anthrax; indeed the most important thing in connection with high temperature cases was to think of anthrax. Many animals ran temperatures up to 107° and recovered; others died in 24 hours. One could not say it was anthrax unless one found the causal bacilli. He remembered a number of deaths in cattle many years ago in which the animals showed nervous symptoms. The deaths were attributed to anthrax, but he felt certain that they were due to lead poisoning. The disease cropped up in unexpected places.

Mr. Townson remarked that he was impressed by what had been said by Colonel Head and Mr. Harvey. He thought the possibilities in connection with anthrax should be more forcibly impressed on farmers: farmers always wanted to blame lightning for unexpected deaths. Did Mr. Perkins rely on M'Fadyean's purple reaction with methylene blue? Were these animals which ran high temperatures due to anthrax, and which recovered, capable of spreading anthrax?

Mr. Richardson said one form of the disease in the horse was acute enteritis, and he thought Caulton Reeks considered that practically the only cause of acute enteritis in the horse was anthrax. Pigs were usually infected through some other sick animal being killed on the premises, and plenty of pigs were killed "to save their lives." He had seen an anthrax-infected carcase hung up in a butcher's shop. Animals with high temperatures were usually all right next day.

Mr. Motton observed that although farmers were expected to regard sudden and unexplained deaths as being possibly due to anthrax, unless they expressly stated to the police that they suspected anthrax, the police were very disinclined to take any action. He thought it would be much more easy if the police accepted the simple statement that a sudden or unexplained death had occurred and put the case under the Anthrax Order.

Mr. A. R. Smythe said the police did not make things easy. When animals were reported as having died suddenly, unless the owner declared that he suspected anthrax they would take no action. Unexplained sudden deaths should be dealt with as suspected anthrax. He knew of a recently calved cow being treated for milk fever. She died and the cause was anthrax. Swelling of the throat was not a constant symptom of anthrax in pigs. The method here was to destroy anthrax carcases by burning, but there was a Continental method in which they were destroyed by super-heated steam. When a cow died of anthrax and she was a member of a herd, could they stop the sale of the milk?

Mr. R. H. Smythe agreed with the two previous speakers as to police methods. The veterinary surgeon was in a difficult position. The owner 'phoned and told him he had a sudden death among his stock—he wanted it to be due to lightning. The veterinary surgeon told him to report the death to the police and the police would take no action unless the owner said he suspected anthrax. A very large number of the deaths were not due to anthrax, but no one could say which were not without investigation. Nevertheless, if the veterinary surgeon was frequently responsible for the reporting of negative cases, there was always the thought that the police might misinterpret matters. One positive case missed would pay for the lot. In West Cornwall the knackers would not remove those cases unless they had been examined by a veterinary surgeon.

It was easier to obtain blood samples from the lower ear when carcases were lying on their sides: the upper ear was often bloodless. In making smears one sometimes found a large number of corpuscles and in others very few. Some were difficult to stain or they easily washed off from the slide. Did the essayist think the anthrax bacilli varied in virulence? Why the variations in the number of deaths when several animals ran high temperatures in outbreaks? He mentioned the case of a cow which aborted and developed a swelling the size of a football on the thigh. She died and two or three days later a cow died of anthrax in the same stall.

Colonel Head remarked that he thought he remembered a record of anthrax breaking out in a pack of hounds.

Mr. Barbour said that he did not agree that feeding stuffs were of little importance in connection with anthrax infection. There were rarely two deaths on the same farm. If one traced the origin of the feeding stuffs and the boat on which they had been carried, one would often find that several outbreaks were connected through the boat. When Russian barley was cheap in 1928-29 there were 50 outbreaks on separate farms and the origin of the outbreaks was traced back to the boat which carried the material. China beans and earthnut cake accounted for isolated outbreaks all over the country and they had been traced back to a common consignment. He admitted the possibility of soil infection, but with present-day methods of dealing with carcases it should not be common. He knew of a case where a cow out in a field alone had died of anthrax: there was no artificial food. The owner had been on the farm 15 or 16 years; a case of anthrax had been buried in the field 18 years before and two years before the death the farmer had ploughed the field. He thought adult dogs were immune, but a pup was not. In his view, the theory of the carriage of infection by fowls was rather far fetched; there was usually something more obvious. In connection with foods, one animal might die of anthrax and 60 or 70 might have had the same kind of food. There might be several with high temperatures and they recovered, but it must be remembered that when temperatures were taken in normal herds it was not unusual to find many with high temperatures.

Some animals died with what might be regarded as orthodox symptoms of anthrax but the deaths were not due to that disease: more animals with typical *post-mortem* anthrax signs died from black-leg than from anthrax.

Mr. Watkins observed that he would like to say one more word arising from Mr. Barbour's remarks about resistance of adult dogs to anthrax. Many years ago when one of his uncles was house surgeon at the "Dick" College, his dog ate a big proportion of a large spleen brought to the College as an interesting specimen. No one being about, it was put down in one of the stables and the dog found it first. Apart from a very tarry type of diarrhoea for a day or so the dog was in no way upset. The spleen proved to be anthrax-infected.

The Reply

In reply, Mr. Perkins thanked Mr. Willing for his very thorough opening to the discussion and also all the other members who had contributed.

He said that he felt there was a great deal more to be learnt about anthrax than was known at present and suggested the probability of an unknown additional factor in connection with infection. If this was not so, why, for instance, could animals which have anthrax bacilli in their blood show no symptoms of disease? It had been suggested that a debilitating factor such as fatigue could bring on symptoms. This was mentioned at the South African Congress by Whitworth who also pointed out that in Africa the disease frequently appeared after a sea journey when undoubtedly there was definite fatigue. In the same paper it was also mentioned that blood-sucking flies could transmit the disease mechanically from animal to animal.

According to statistics, the number of cases occurring in sheep was very small in comparison to that in cattle, yet sheep, with the exception of Moroccan sheep, were susceptible to infection. It was difficult to determine whether actually the number of cases was as small as the statistics led us to believe or whether it was due to the fact that sheep which died suddenly were buried or otherwise disposed of without being reported. The use of anthrax vaccination in this country was contra-indicated except in special circumstances where outbreaks assumed such proportions that on particular premises one was getting a continual loss of individual animals with short periods between. In these cases if one or two animals were killed by the use of vaccine the risk was justifiable.

Statistics did not bear out the suggestion that the disease was more common where artificial feeding stuffs were used. Nearly every dairy farmer used concentrates for feeding his stock, yet some districts were very free from anthrax while in others the losses were heavy. If feeding stuffs were as important as suggested the disease should be more evenly scattered over the whole country.

Mr. Perkins agreed with Colonel Head that there were many more deaths from anthrax than were reported. A veterinary surgeon who allowed a carcase to go to the knacker's yard without taking the precaution of examining a blood smear must be held responsible if it was anthrax.

It was supposed that old dogs had a very high degree of immunity against anthrax, but young dogs were undoubtedly susceptible.

A high temperature was not considered a constant symptom of anthrax in cattle and in some cases one might get an animal affected which did not show a temperature of over 103° F. One had very high temperatures in cattle on some occasions but it was quite possible that this might be due to vegetable poisons due to the eating of certain weeds.

Replying to Mr. Townson, the essayist said that the methylene blue reaction could be relied upon in the case of bovine bloods. Care must be taken not to confuse this reaction with the purplish tint one sometimes got if mucus or muscle juice was present on the slide. A new methylene blue solution was not too reliable; it should be allowed to stand for two or three months before use. In regard to septicaemic cases of anthrax it was quite possible that these animals might be passing the bacilli with their dung, but the risk of the spread of infection was probably slight.

Mr. Watkins had referred to grasses damaging the mucous membrane of the mouth and thus being a contributory cause of the disease. The writer quite agreed with this idea.

Replying to Mr. Barbour, Mr. Perkins said that it was not his intention to convey the impression that foodstuffs were of no importance as a source of infection; his point was that although this might be a common cause many cases after careful investigation could be better explained by other means. There was a great tendency for persons conducting an enquiry to jump to the conclusion that because foreign feeding stuffs had been used disease was due to that cause, with the consequence that other possible channels were not probed and in many cases were not even considered. He was also of the opinion that the typical symptoms of anthrax were less common than the atypical symptoms.

Regarding Mr. Richardson's remark that the acute form of anthrax was more common in horses than people might imagine, he thought that acute fatal cases of enteritis should give rise to a suspicion of anthrax being the cause. Human beings were apparently less susceptible to anthrax than were cattle. He knew of carcases, where the circumstantial evidence was such that it was practically certain that they were anthrax-affected carcases, being sold and eaten by human beings. Cooking possibly would destroy the organisms and so make the meat safe from the point of view of anthrax. In one case he remembered a butcher's assistant damaging his cheek just under the eye from a spicule of bone during the cutting up of a carcase which was very strongly suspected of being affected with anthrax. A farm lad who also helped to dress the carcase damaged his finger. Both developed anthrax which was confirmed by microscopical examination, yet the people who had bought and eaten the carcase showed no sign of disease.

With regard to the remarks of Messrs. Motton, R. H. Smythe and A. R. Smythe, the inspectors of the local authority could only take action under the provisions of the Anthrax Order when it was reported to them that an animal was suspected to be affected with anthrax.

Replying to Mr. A. R. Smythe's question in regard to the sale of milk from a farm where anthrax has been confirmed in an animal, a veterinary inspector was not allowed to stop the sale of milk from the herd. The proper course in this case was to leave the responsibility with the Medical Officer of Health for the district, who could stop the sale of such milk without compensating the owner. If the veterinary inspector took such action except in regard to any particular animal which in his opinion was affected with anthrax the local authority would be responsible for compensation.

Mr. R. H. Smythe had raised the point as to the number of corpuscles in a smear being an indication of whether one was dealing with a positive or negative case. Mr. Perkins said that a very weak blood, in his experience, was usually negative, but he regretted that he could give no information in regard to the point raised. He also said that although one must admit that strains of anthrax bacilli might possibly vary considerably in virulence, it was his opinion that the susceptibility of the individual animal was a more important factor in infection. With the exception of lesions seen in connection with vaccination he had not seen natural cutaneous anthrax in a cow, but if it could occur as a result of an intradermal injection he could not see why it might not occur naturally.

"Magnum" Pessaries

(HEWLETT'S)

	Doz.	Gross Per doz.
Acid. Boric, 2 drms.	5/6	5/–
Acid. Boric, 2 drms. Iodoform, 1 drm.	7/6	7/–
Alkaline	5/6	5/–
Chinosol, ½ drm.	8/6	8/–
Creoform	8/–	7/6
Creosalgen, Surgical 3%	5/–	4/6
Formaldehyde 2%	6/–	5/6
Hewsol	5/–	4/6
Hyd. Perchlor. (1 in 2000)	5/6	5/–
Iodermiol 10%	7/6	7/–
Iodoform, 1 drm.	7/–	6/6
Salol, 2 drms.	7/–	6/6
Salol, 2 drms. Iodoform, 1 drm.	8/9	8/3

With Cocoa Butter basis (except Formaldehyde), 1/- doz. extra.

Methyl Violet Intra-Uterine Pessaries

(HEWLETT'S)

These pessaries are made with a gelatine basis. They can be readily inserted and will keep the parts in an antiseptic condition for a long period.

Price 2/9 doz. Gross quantities 2/6 doz.

Hewlett's "Handy" Teat Bougies

Being the same thickness as a milk syphon, they can be easily inserted or removed as desired. Prepared with an aseptic basis, they have been found most useful for inserting into injured Teats, or after operating on a blind Teat to prevent the closing of the milk duct. A supply of Antiseptic Lubricant is included in each box. They measure 2¼ ins. long. Price: 1/3 per box of 12, 9d. per box of 6 Loose, 1/- per doz.

Cupric "Handy" Teat Bougies

Prices: 1/9 per box of 12. 1/- per box of 6.

Hewlett's "Super-Handy" Teat Bougies

Prepared with an aseptic basis these bougies are convenient, and easily inserted or removed. A supply of Antiseptic Lubricant is included in each box. They measure 3½ ins. long. Price: 1/6 per box of 12, 1/- per box of 6, Loose, 1/3 per doz.

Cupric "Super-Handy" Teat Bougies

Prices: 2/- per box of 12. 1/3 per box of 6.

Introduced and Manufactured only by

C. J. HEWLETT & SON, LTD., 35-42 Charlotte Street, E.C.2.

Telephones: Bishopsgate 1172 and 1173. Reg. Tel. Address: "Pepsine, Finsquare, London."

"OWNERSHIP OF X-RAY INCREASES THE VALUE OF THE VETERINARY SURGEON'S SERVICE TO HIS COMMUNITY"

● The practitioner who can offer COMPLETE diagnostic facilities is stamped as keen, progressive and alive to modern developments. To him is most likely to come the best clientele. While he takes justifiable pride in being able to render a broader service—aided by radiographic and fluoroscopic equipment which simplifies diagnosis often otherwise obscure—he is equally interested in the incontrovertible fact that giving better service, doing better work, results, as a rule, in attracting increased patronage.

As to the choice of an x-ray unit best suited to your requirements, why not share the advantages which so many practitioners and veterinary schools have reaped by investment in a Victor Model F shockproof (oil immersed), portable, veterinary outfit? Really portable—42 lbs. in case—safe, and simple of operation, the Model F nevertheless possesses a remarkably wide diagnostic range of service. Return the coupon below for full particulars and price details. (Deferred terms purchase if desired) You will incur no obligation.

VICTOR X-RAY CORPORATION LIMITED

15-19 CAVENDISH PLACE, LONDON, W.1

BRANCHES: BELFAST BRISTOL BIRMINGHAM DUBLIN GLASGOW LEEDS MANCHESTER

Please send me by mail full particulars and price of the Victor Model F portable veterinary x-ray unit.

.....

V.R. .....

ACUTE ECZEMA OINTMENT

(VETERINARY)

For Erythema, etc., in pet dogs. Composed of Calamine, Salicylic Acid with Oxide of Zinc, etc., perfumed. To be well rubbed into the affected parts three or four times a week.

Price 3/- per lb. In 1 oz. and 2 oz. pots, 6/6 and 9/- per doz.
In tubes, 6/6 per doz.

BISMA-CALNA CREAM

(VETERINARY)

The Combined Carbonates of BISMUTH, MAGNESIUM, CALCIUM and SODIUM

BISMA-CALNA CREAM will be found most effective in the treatment of Acute Gastritis. Ordinary cases of Indigestion are speedily relieved, and in the more serious digestive troubles gratifying results will be obtained by the continued employment of BISMA-CALNA CREAM.
DOSE (for dogs). In acute cases, half teaspoonful to one tablespoonful, according to size and breed every two hours; later reduced to twice daily.

PRICE 1/6 per lb. Winchesters 1/4 per lb.

JOHN RICHARDSON & Co., Leicester, Ltd.

Manufacturing Chemists,

Established 1793. LEICESTER. Incorporated 1891

All Veterinary Drugs and Preparations supplied by

The Boots Chemists

ARE GUARANTEED TESTED FOR PURITY and STRENGTH

with the same skill and care as is given to those used in the general dispensing department.

Ask for Professional Price List and for Discount Terms to Veterinary Surgeons.

Over 1,150 Branches in Gt. Britain

BOOTS PURE DRUG CO., LTD., NOTTM.

B. D. H.

LAMB DYSENTERY PROPHYLACTIC (VACCINE)

This vaccine is made in the B.D.H. laboratories from the strain of *Cl. welchii* which is responsible for lamb dysentery.

To effect complete prophylaxis all ewes should be injected with B.D.H. Lamb Dysentery Prophylactic (Vaccine) just before tupping time as well as seven to fourteen days before lambing.

B.D.H. Lamb Dysentery Prophylactic (Vaccine), every batch of which is tested and proved efficient in the field before issue, is supplied in bottles containing 50 c.c. and 250 c.c. It is available to veterinary surgeons direct, or, if desirable, through their usual pharmacist.

Literature on request

THE BRITISH DRUG HOUSES LTD. LONDON N.1

LDPV/4

FIELD STATION FOR THE AGRICULTURAL RESEARCH COUNCIL

PURCHASE OF THE COMPTON MANOR ESTATE, BERKSHIRE

Major G. W. Dunkin Appointed Director

As has been widely announced in the Press, a development of great importance and significance to agriculture and veterinary science has been entered upon by the Agricultural Research Council in the acquirement of a large estate for the establishment of a Field Station, of which, as all his colleagues in the profession will be gratified to learn, a veterinarian, and one of such eminence and experience as Major G. W. Dunkin, is to be Director. Following is the text of the statement issued, in this connection, by the Agricultural Research Council.

The Agricultural Research Council, acting under the direction of the committee of the Privy Council for the Organisation and Development of Agricultural Research, and after consultation with the Ministry of Agriculture and Fisheries and the Department of Agriculture for Scotland, have purchased from Mr. Alfred Barclay the Compton Manor Estate of about 1,500 acres, on the Berkshire Downs, about 16 miles to the west of Reading.

The objects of the Council in establishing a field station of their own are twofold, and have been adopted after a careful survey of existing facilities for agricultural research. Firstly, it is hoped to supply from Compton to agricultural research institutes for experimental purposes animals of known history and free from disease; for these there is a demand which it is becoming increasingly difficult to meet. The Council are, therefore, also buying from Mr. Barclay his well known herd of pedigree Ayrshire cattle and his smaller herds of pedigree Friesian and Guernsey cattle, which have for some years been under expert supervision by two veterinary members of one of the Council's own committees. All the cattle are free from tuberculosis, and two of the three herds are free from contagious abortion and mastitis. The herd of some 300 Large White pigs, which is being purchased by the Council, are also free from tuberculosis. Secondly, the Council desire to fill a gap in the existing facilities for research by providing opportunities for experiments on a field scale under strictly controlled conditions. Such experiments will be related, in particular, to those problems of animal health and disease which fundamental and smaller scale investigations conducted at Research Institutes, or initiated by the Council, may indicate are at a stage requiring the use of animals in larger numbers than can be accommodated at an Institute without detriment to its general programme. A section of the estate will be isolated and cattle units will be built as soon as possible for the first series of experiments on contagious abortion in cattle. In the course of their management of the estate, the Council will also undertake any experiments with pastures and crops which can usefully be done there.

With the consent of the Medical Research Council, the Agricultural Research Council have appointed Mr. G. W. Dunkin, M.R.C.V.S., D.V.H., at present Superintendent of the Farm Laboratories of the Medical Research Council at Mill Hill, to be Director of the Field Station at Compton. Mr. Dunkin will be assisted by a small scientific staff. A laboratory and houses for the breeding and maintenance of stocks of small laboratory animals will be built on the estate.

The need for a field station of the type now to be established arose in the first place from the requirements of the Council's committee on *Brucella abortus* Infection in Animals (Contagious Abortion) and Man. Of this committee, Sir Joseph Arkwright is the Chairman, and among its members are the principal workers on contagious abortion in Great Britain. The Council's Committee were asked to consider, in the light of the recommendations made by the committee on cattle diseases under the Chairmanship of Sir Frederick Gowland Hopkins, how best research on contagious abortion could be advanced. The committee on *Brucella abortus* infection were of opinion that it was desirable to conduct experiments with preventive vaccines and in regard to sources of natural infection on a herd of some 200 cattle, divided into a number of strictly isolated units, under the committee's own control. It appeared to the Council and to their Animal Diseases Committee that it would be an unwise and an uneconomical step to provide at any one research institute, or at two institutes, accommodation for experiments on a single disease on so large a scale, or to divert the energies of an Institute's staff to so extensive a series of large-scale experi-

ments. The general survey of all agricultural research in progress in Great Britain made by the Agricultural Research Council had brought to light other instances in which facilities for research on a field scale, but under conditions of control which could not be maintained in ordinary farming practice, were required. Furthermore, in the course of the examination of the scheme of contagious abortion experiments, the desirability of increasing the supply of animals which could with confidence be accepted as being free from certain specified diseases, and whose history had been accurately recorded, had emerged. Agreement was, therefore, reached that the right course was to establish under the Council's control a field station which would fulfil these requirements and, after a most careful search, the Compton Manor Estate was selected. As the examination of the policy to be adopted in using the estate proceeded, it became evident that opportunities would arise for useful experimentation on crops as well as on animals.

It is the desire of the Agricultural Research Council that their station should be of value to those who are engaged in agricultural research, and it is hoped that from time to time institutes will second members of their staff to work at Compton with the small resident staff upon problems for which the station's resources are most suitable. If, however, the station is to be put to the best use, the number of major experiments in progress at the same time must be strictly limited. Probably only one series of large scale experiments upon cattle, pigs or poultry respectively, should be undertaken at one time. With cattle the first group of experiments will be concerned with contagious abortion. They cannot be begun until the necessary isolation units have been built and they may last for five or even for ten years; but the fact that animals known to be free from abortion are available at Compton will shorten the period of experiment by three or four years. With pigs it is under consideration, as a result of consultation with the leading workers in pig research, to limit attention in the first instance to the possibility of reducing the rate of early mortality in small pigs—an urgent problem for pig breeders—in a healthy herd run under good commercial conditions. With poultry, observations will be made to test the hypothesis that susceptibility to fowl paralysis is inherited in certain strains of birds. For this purpose birds of known pedigree, which have been under examination by Professor T. Dalling, at the Wellcome Laboratories at Beckenham, will be used.

It is not the intention of the Council to develop at Compton a self-contained research institute. The resident scientific staff will be small and the laboratory will only be large enough to meet the needs of that staff and of visiting workers from the research institutes. Small animals must be bred on a considerable scale for use in connection with experiments on animal diseases at the station. The Council can perform a further useful function by breeding a small surplus of healthy small animals for supply to institutes.

Although the station is to be used for field scale experiments, the fact that a primary object will be to supply large as well as small animals to research institutes is a guarantee that the need for developing work with large animals at the institutes is appreciated by the Agricultural Research Council, who are responsible for giving scientific guidance regarding all agricultural research aided by the Government. The division of functions between the Council's station and the institutes has been clearly, though not too rigidly, delimited. It is for the field station to provide opportunities for experiments which are at a stage between research institute investigations with small groups of animals and ordinary farming practice. In research this stage is a crucial one.

. . . . .

The estate is crescent-shaped, favouring the isolation of the sections, and the breeding operations and commercial farming are to be carried on with the same staff, although Mr. Barclay himself is retiring entirely. During the 25 years that Mr. Alfred Barclay has farmed at Compton the elimination of disease has been the principal object of his programme. The herds are practically self-contained—the few bought-in have come from the best pedigree and tuberculin-tested stock—and on the rolling Berkshire downland, where all the cattle are reared, the risk of infection from outside sources is reduced to a minimum. The land rises to 550 feet above sea-level, and most of the pasture is over the 500 feet mark. Under these healthy conditions, with continuous testing, both for tuberculosis and contagious abortion, the cattle have become widely known for their excellent health, robust constitution and good conformation.

Mr. Barclay was one of the pioneers of tuberculin-tested milk production, and his cattle were among the first to be recorded in Berkshire. The three dairies, standing high on the Downs, are so removed from other farm activities that the cattle do not come into contact with other stock, and the arable forms a buffer between each of the three downland grazing areas. All the milk, averaging about 2,300 gallons a week, is sold wholesale, a large proportion being bottled on the farm as "Certified." The cattle calve in boxes, and all calves, after weaning, are removed to the farm, later to graze in separate pastures. In this way the risk of infection among the heifers is reduced to a minimum.

Major G. W. Dunkin, M.R.C.V.S., D.V.H.

Director, Agricultural Research Council's Field Station

Major George William Dunkin, M.R.C.V.S., D.V.H. (Liv.), was born at Canterbury, July 26th, 1886, receiving his education at Simon Langton School. Graduating from the Royal Veterinary College, London, in December, 1908, he subsequently attended at the University of Liverpool and obtained the D.V.H. From 1910 - 1914 he was engaged in busy country practice at Canterbury, but at the outbreak of War joined the R.A.V.C. and was appointed veterinary officer in charge of troops at Canterbury. In 1915 he was posted to the 21st Veterinary Hospital and sailed for Egypt in which country he remained till the termination of the War. During this period he was promoted to Major, serving as veterinary officer to a remount depôt and commanding the 20th Veterinary Hospital.

Elliot & Fry, Ltd.

His services in these connections were outstanding and deservedly recognised by his being mentioned in despatches.

After demobilisation a return to private practice occupied his professional life up to the year 1923 when he was appointed by the Medical Research Council to the position of Superintendent of the Farm Laboratories at Mill Hill. During that period, however, and from then onwards, Major Dunkin took an active interest in the affairs of his local Division of the N.V.M.A., *viz.*, the South-Eastern. His personality and forceful method of stressing his arguments soon attracted the attention of his fellow members and in 1923 he was voted to the Presidential Chair. Prior to this he had been elected as the representative of that Division to the Councils of the N.V.M.A. and Victoria Veterinary Benevolent Fund.

The South-Eastern Division was not the only veterinary society to recognise the enthusiasm and qualities of the subject of this short biography, as one of the National's largest Divisions, namely, the Central, placed him in their Presidential Chair in 1925 and in 1929 awarded him the Gold "Victory" Medal. The name of Major Dunkin has appeared on practically all the standing committees of the N.V.M.A. not to mention numerous sub-committees, and it need hardly be said that his services on these were given whole-heartedly and his arguments have always been listened to with respect.

Such enthusiasm and desire for the advancement of his profession having been shown, it was almost a foregone conclusion that when he offered himself for election to the Council of the Royal College of Veterinary Surgeons, in 1929, his election would be assured, and from that date his long-sighted views on the matters brought before that body have always been expressed in no uncertain terms and have proved of value to the Council as a whole.

Reverting to the appointment as Superintendent at Mill Hill, Major Dunkin immediately turned from the arts of private practice to the intensive study of research and the results of this were soon recognised when he was linked with Sir Patrick Laidlaw in the research into canine distemper. The value of this work is now so well known that comment is superfluous.

Scientific work by Major Dunkin has not been restricted to the above for he has published papers on Johne's disease, tuberculin tests, etc., etc. Not perhaps the least noteworthy of his activities was urging that the "National" should set up a committee to investigate the vexed question of euthanasia in small animals. His suggestion was adopted

and under his Chairmanship the committee carried out investigations over a period of three years, publishing its report this year.

Among the honours, other than those enumerated, conferred upon Major Dunkin may be mentioned election as Hon. Life Member, New York City V.M.A., and the Presidency of the Section of Comparative Medicine, Royal Society of Medicine. Add to this the Major's appointment to several committees of the Medical Research Council and the Agricultural Research Council and it must be admitted that few men in the veterinary or other professions have been endowed with the virility or steadfastness of purpose to carry out such an amount of work in so comparatively short a time as Major Dunkin.

And now he is leaving Mill Hill and the Medical Research Council after 14 years of hard and useful work to take over the very arduous and responsible duty of founding and carrying on an important field station under the aegis of the Agricultural Research Council, at Compton, Berkshire, of which he will be the first Director.

Doubtless when the necessary buildings have been completed and the work organised opportunity will be given to visit the institute with its farms covering many hundreds of acres and a full report of this will then, it is hoped, appear in the *Veterinary Record.* In the meantime Major Dunkin may be assured of the good wishes of the profession in his new sphere and also its confidence in his ability to uphold, with dignity, the position of the veterinarian in the matter of the momentous researches to be conducted.

P. J. S.

POTASSIUM AND PARALYSIS

"Familial periodic paralysis, as its name implies, is an hereditary disability characterised by periodic attacks of paralysis usually of the limbs," states *Nature.* "Aitken, Allott, Castleden and Walker (*Clin. Sci.* 3. 59. 1937) have recently published observations which promise to illuminate this hitherto obscure malady. A patient was observed who attributed his paralytic attacks to heavy meals. It was found that the attacks could with regularity be produced about five hours after the ingestion of 250 gm. glucose, or by the injection of 20 units of insulin, or most surely by the combined effects of glucose and insulin. Analysis of the blood during and between the paralytic attacks showed that the onset of paralysis was associated with a fall of serum potassium from the normal value of 16 to 20 mgm. to below 12 mgm. per 100 c.c. serum. The paralysis could be relieved in 15 min. by the ingestion of 12 gm. potassium chloride. A fall in serum potassium occurs in normal individuals when glucose passes from the blood into the tissues, but in periodic paralysis the fall is unusually great, and it is this abnormality which constitutes the essential feature of the disease."

It would be interesting to know whether a similar condition occurs in the domesticated animals.

The Veterinary Record

October 23rd, 1937.

The Agricultural Research Council's Field Station

ELSEWHERE in this issue will be found an announcement that Major G. W. Dunkin is to take charge of the research centre recently acquired by the Agricultural Research Council. The Council—which, as our readers are aware, is charged with the supervision and co-ordination of research in all branches of agriculture, whenever that research is financed from public funds—has for some time, we understand, been impressed with the need for experiment to be carried out on a larger scale than has hitherto been practicable. With this end in view, sanction of Government was sought to acquire, and maintain, a suitable centre where farm animals could be bred and kept free from disease and where large-scale experiment could be done on diseases of stock and allied problems. The result is the purchase of the Compton Manor Estate in Berkshire, which consists of three farms, comprising 1,500 acres. There are already established on the estate a herd of Ayrshire and Friesian cattle numbering nearly 300 head, and also a herd of 300 Large White pigs. The cattle have been under veterinary supervision for some years, and, as a result, they are free from tuberculosis and two of the three herds are free from contagious abortion and mastitis. The work of those who have been responsible for the progress thus made in freeing the herds from these diseases is, of course, of prime importance and has very materially shortened the period which must elapse before the contemplated investigations can begin.

We understand that the Council has in mind two principal immediate objectives. The first is a large-scale attack upon the problem of contagious abortion. The sub-committee of the Council which advises upon research into this disease has, we are informed, been engaged for some time in drawing up a plan of operations. The second objective is the segregation of a portion of the present herd for the purpose of breeding cattle under conditions which should cause them to be as free from disease as care, forethought, and available veterinary experience

suggest. These animals will be available for further work at Compton and for the use of other workers who are now so greatly handicapped by the inability to obtain and maintain such stock. In fact, it is hoped that facilities for work at other centres will be considerably improved as a result of the establishment of this Agricultural Research Council centre.

We have not hesitated, in the past, to criticise the Agricultural Research Council in the columns of this journal. We have pointed out that a body which supervises the major portion of veterinary research and which did not include one veterinarian, could by no one be said to be adequate. Further, such a state of affairs implied a slight upon the profession which was unjust and unjustified. Some time ago, a veterinarian was made a member of the Council. Whilst warmly welcoming this appointment, we still feel that our representation is quite inadequate and we shall not cease from efforts to obtain a more substantial one. In other respects, our relations with the Council have been cordial, and it is without hesitation that we offer to the members our sincere congratulations upon the step which they have taken. It is one of the most significant moves in the history of veterinary research in this country. The losses from diseases of stock, although greatly diminished by measures of veterinary control, are still a matter of grave concern in the national economy. The size of the Compton Estate, and of its animal population, indicate the extent of the proposed investigations. The Council has instituted a policy which is bold and far-seeing and which will be appreciated by all, owners and advisers, in the animal industry.

We heartily congratulate the Council on selecting our colleague Major Dunkin to direct operations at the new research centre. Major Dunkin has long taken a leading part in the counsels of our profession and has earned our gratitude for the share he has taken in promoting the interests of the N.V.M.A.; in particular, we shall not readily forget the work he has done for this journal. In selecting him for the post, the Council has readily acquiesced in the view that the ideal head of a research station devoted to problems of animal health and disease is a veterinarian, with long and intimate experience both in the successful execution of veterinary research by modern methods and in the large cognate field of animal husbandry. Major Dunkin has our sincere goodwill and we express to him and the members to be appointed to his staff the desire of our profession to collaborate with them in every possible way to achieve success. In like measure, we extend to the Agricultural Research Council our appreciation of the opportunity they have given the profession to show what it can do, and we assure them that our support will not be ungrudging. We are sanguine that this new development will prove of untold benefit to the stock-owner in this country and, we have no doubt, in even greater measure to the Empire at large.

ANNOTATION

"Vesicular Exanthema of Swine"

[I.—Crawford, A. B. (1937.) **"Experimental Vesicular Exanthema of Swine."** *J. Amer. Vet. Med. Assoc.* **90.** 380.

II.—Andrews, W. H., Eccles, A., Hole, N. H., Polding, J. B. Longley, E. O., Hamilton, A. A., and Graham, A. M. (1937.) **"Vesicular Exanthema of Swine."** Appendix I, Section V, Fifth Progress Report of the Foot-and-Mouth Disease Research Committee, H.M. Stat. Off., London. p. 99.]

Reference has already been made (*see* annotation in *Vet. Rec.* [1936.] **48.** 709) to the occurrence in California during 1933 and 1934, and probably also in 1932, of an infectious disease in garbage-fed swine, clinically indistinguishable from foot-and-mouth disease or vesicular stomatitis. Traum (1936, *J. Amer. Vet. Med. Ass.* **88.** 316) in some preliminary experiments with material collected from diseased pigs succeeded in infecting swine, and sometimes horses, by inoculation. His failure to infect cattle and guinea-pigs appeared to him sufficient evidence to justify the consideration of the disease as a separate entity and he termed it "vesicular exanthema of swine."

The subject matter now under review deals chiefly with experimental work carried out respectively at the Animal Disease Station, Beltsville, Maryland, U.S.A. (Crawford), and at the Research Station of the Ministry of Agriculture, Pirbright, Surrey, England (Andrews and colleagues), with strains of virus obtained originally from California. As far as can be ascertained, so far "vesicular exanthema of swine" has not been reported elsewhere than in California. As regards symptoms, vesicles of varying size may appear on the snout, nose, lips, tongue or on the feet between the digits, around the coronary band, on the ball of the feet or on the dew-claws. Lesions on the udder and especially the teats have been observed in a large proportion of nursing sows. These

eruptions are usually preceded by, and accompanied by, a febrile reaction. Later the vesicles rupture and heal. In some outbreaks there was a predominance of snout lesions, whilst in others foot lesions were more common. In general, all investigators, who have studied the disease closely, appear to be agreed that the disease cannot be distinguished clinically from naturally occurring, or experimental, foot-and-mouth disease in pigs, or from experimental vesicular stomatitis in pigs.

As regards species susceptibility, in different research centres in America, England and Germany, more than 100 cattle of different ages have now been inoculated by different routes, intradermally into the mucous membrane of the mouth, and/or intramuscularly or intravenously with "strains" of virus of this Californian disease of pigs, with entirely negative results. Similarly, negative results have attended attempts to infect several hundreds of guinea-pigs. Mohler, in America (cited by Traum), failed to infect a European hedgehog with the virus of "vesicular exanthema of swine," although this animal appears to be highly susceptible to infection with foot-and-mouth disease. Andrews and his colleagues at Pirbright state also in reference to hedgehogs that "no definite infection has resulted in these animals from inoculation with vesicular exanthema virus, nor in healthy hedgehogs placed in contact with those inoculated."

The last-named workers state that in a limited number of experiments they failed to infect wild rats, sheep and goats. All these species of animal have, at one time or another, been infected with the virus of foot-and-mouth disease. (Andrews and his co-workers state, however (p. 72, Section III), that "up to the present time no evidence has been obtained of the existence of strains of foot-and-mouth disease with particular virulence for sheep.")

It was pointed out in the previous annotation on this subject that Traum stated that he had produced mild localised lesions on the dorsum of the tongue of some (16 to 28) horses by inoculation. The German workers at the Insel Riems have also reported that they were able to produce lesions in horses by inoculation. Andrews and his colleagues failed to observe any lesions in five horses inoculated intradermally into the tongue or lips with a strain of virus received from the U.S.A. Bureau of Animal Industry's Experimental Station. The annotator has no information as to whether this strain was the same as that employed by Traum in his original experiments, and/or the same as that sent to Germany for investigation. However, Traum stated in a letter to Crawford, accompanying three samples of virus collected from different sources during the 1933 outbreak, that only one of these was found to be capable of producing lesions in horses. Crawford also tested the susceptibility of horses to inoculation with three other "strains" of virus recovered from pigs during outbreaks of the disease during 1934. With only one of these three strains could horses be infected. This particular "strain" caused less severe lesions in pigs than the other two. These differences in the behaviour of "strains" of virus when inoculated into horses may be more apparent than real, but if the results of these comparative tests are valid they might serve to explain the seeming discrepancies in the observations of different investigators. In this connection, however, attention should again be drawn to the suggestion of Traum that although up to present no cases of "vesicular exanthema of swine" have been observed in horses, under natural conditions, nevertheless cases may have occurred and perhaps this would explain some of the failures to transmit the disease experimentally from swine to horses.

Suggestive evidence emerges from Crawford's experiments as to the existence of more than one immunological type of the virus of "vesicular exanthema of swine." It is suggested that four types, A, B, C and D, probably exist. Although the evidence for this would have been more convincing if the experimental pigs had been retested with an "homologous" strain before being reinoculated with an "heterologous" one, yet it was shown that as a general rule recovery from infection with one "type" did not confer immunity to inoculation with another "type." Further, in other groups of pigs, each "type" appeared to immunise the animals against reinfection with the homologous "type."

A more complete examination of the three "types" of virus, A, B and D (C has now apparently been lost) taking the precautions suggested above, would appear to be indicated, and it would be useful if this was supplemented by cross-neutralisation tests with anti-sera. If Crawford's results are accepted on their face value they would suggest that the differences between the "types" of virus of "vesicular exanthema of swine" are more clear cut than in the case of foot-and-mouth disease. In the latter disease, although it is easy to distinguish between different immunological types in guinea-pig tests, when experiments are made in cattle and pigs in which species the disease occurs under natural conditions, there appears to be an overlapping, or extension of the resistance to infection produced by strains of different types, in some instances.

Reference has been made previously to the cross-immunity experiments carried out by Reppin and Pyl (1934.) [in *Arch. wiss. prakt. Tierhlk.* **68.** 183.] in the Insel Riems, Germany, with a sample of "swine vesicular exanthema" virus from America. These authors concluded that the virus differed immunologically from the three standard types, Vallée, A., Vallée, O.,

and Waldmann, C., of the virus of foot-and-mouth disease. Suggestive, but not conclusive, evidence to support this opinion is now forthcoming from the experiments made by Andrews and his co-workers at Pirbright.

It may be recalled that the German workers concluded that there is an immunological relationship between the viruses of vesicular stomatitis and "vesicular exanthema of swine." This conclusion was based on the results of experiments, one in which seven pigs recovered from the New Jersey type of vesicular stomatitis virus were inoculated with the virus of "vesicular exanthema of swine," and only two showed lesions; and another in which four pigs recovered from the Indiana type of vesicular stomatitis virus were inoculated with the virus of "vesicular exanthema of swine," and only one developed lesions. On the other hand, Traum stated that cross-immunity tests in horses failed to show this suggested relationship between the virus of vesicular stomatitis and the virus of "vesicular exanthema of swine."

Reppin and Pyl (1934.) [in *Arch. wiss. prakt. Tierhlk.* **68.** 183.], as previously pointed out, also stated that in their "realkinisation" test the virus of "vesicular exanthema of swine" behaved like the virus of vesicular stomatitis and not like that of foot-and-mouth disease. This information is only of a limited interest since all the different viruses so far examined by the realkalinisation test by Pyl behave like the virus of vesicular stomatitis and not like that of foot-and-mouth disease. Further, Galloway and Elford (1935.) [*Brit. J. exp. Path.* **16.** 588.] have given reasons for their conclusion drawn from experimental observations that no accurate differentiation of two viruses can be based on this "realkalinisation test" alone.

Up to the present, therefore, there is insufficient evidence to permit the statement which has been made that "vesicular exanthema of swine" appears to be "nearly related" to vesicular stomatitis.

Crawford submits the results of certain experiments which have led him to the conclusion that, unlike foot-and-mouth disease, "vesicular exanthema of swine" does not appear to be transmitted readily by "indirect exposure" under experimental conditions. However, he hastens to add that there is evidence that under field conditions the disease may spread as a true epizöotic. Galloway and Elford (1935.) [*Brit. J. exp. Path.* **16.** 588.] have similarly pointed out that although it has been stated that vesicular stomatitis spreads less easily than foot-and-mouth disease, yet it may sometimes assume the characteristics of a severe epizöotic disease. However, even if "vesicular exanthema of swine" and vesicular stomatitis did not, at least on occasion, behave as severe epizootic diseases the suggested differentiation of foot-and-mouth disease from these two exanthemata, which it resembles so closely clinically, solely on the basis of its greater contagiousness and more rapid spread by indirect means, is not sound. Even in European countries (*e.g.*, England) and in circumstances where prevailing nutritional and/or climatic conditions and/or particular breeds of cattle could not be considered as factors possibly affecting the issue, outbreaks of foot-and-mouth disease have occurred in which the disease has shown no tendency to spread rapidly by contagion or by indirect methods although the strains of virus concerned in these outbreaks proved to be capable of infecting susceptible animals by inoculation (personal communication —Andrews). Further, Waldmann and Reppin (*Z. InfektKr. Haustiere* (1935.) **47.** 283-322) working in the Insel Riems, Germany, have referred to a strain of foot-and-mouth disease virus which after laboratory manipulations would no longer infect susceptible cattle by contact although it produced a severe disease in such animals by inoculation.

Crawford states that a differential diagnosis of the three diseases, foot-and-mouth disease, vesicular stomatitis and "vesicular exanthema of swine" "requires the inoculation of cattle, horses, pigs and guinea-pigs. In the case of an unknown virus, if only pigs or pigs and horses show characteristic lesions, the diagnosis is "vesicular exanthema of swine," if all four species of animals react the diagnosis is vesicular stomatitis, and if the pigs, cattle and guinea-pigs react and horses fail to react, the diagnosis is foot-and-mouth disease. In the last case, on account of the seriousness of the occurrence, supplementary inoculations would also be made."

The annotator has already stressed the fact that quite apart from the cost and time necessary for such experiments, the differential diagnosis of a disease, exclusively by consideration of animal species susceptibility, especially if a limited number of animals is used, is obviously fraught with many possible sources of error. It must again be emphasised, *e.g.*, that it has been reported that in Germany strains of the virus of foot-and-mouth disease have been recovered from swine which could only with great difficulty be transmitted to cattle, and some strains of virus recovered from cattle have only with difficulty been transmitted to guinea-pigs.

Andrews and his colleagues (Fifth Progress Report [*loc. cit.*], Section III, p. 63-72) have brought further evidence on this point. They have given examples of "viruses occurring naturally in pigs which were found to be almost devoid of virulence for cattle, and also of bovine strains which would infect pigs only with great difficulty." . . . "In no instance have we failed completely to induce lesions of foot-and-

mouth disease in the species of low susceptibility, although in connection with the porcine virus V114 three out of five inoculated cattle gave no reaction at all, one gave an indefinite reaction that would not have permitted a positive diagnosis, and the fifth gave only a poor and limited reaction." . . . " In connection with three of the viruses (one bovine, two porcine) the earlier inoculation gave negative results, and although later inoculation caused characteristic but limited reactions, the strain still failed to infect the resistant species by contact." They also state that although " these viruses have not been characterised by an unusually low pathogenicity for the guinea-pig, one virus R/V1 (*see* Section IVA) was adapted to the guinea-pig with considerable difficulty."

The reader is referred to the previous annotation (*loc. cit.*) for a fuller discussion of this question, and also the possibility of the occurrence, simultaneously in the same epizöotic or in the same animal, of more than one virus, which would lead to further complications.

It must be stressed that the most rapid, economical and certain method of differentiating between the virus of foot-and-mouth disease and that of vesicular stomatitis is filtration through standard collodion membranes to estimate the size value, combined with hen egg inoculation tests. As regards the virus of " vesicular exanthema of swine," the position has not yet been modified, it can only be differentiated at present from the other two viruses by the fact that it has not been transmitted to either cattle or guinea-pigs.

Traum (1936, *loc. cit.*) stated that the virus of " vesicular exanthema of swine " had been received by the annotator with a view to carrying out filtration experiments, but that no information had yet been published. Work of this nature has been hampered by the failure of the different investigators who have studied the disease to find a susceptible small experimental animal. Extensive filtration and other experiments are only possible when such an animal is available. However, if small susceptible animals cannot be found, it may be possible to carry out a limited number of experiments on swine which will provide sufficient data to estimate the size value of the virus. It would also be useful to know if the virus can be cultivated on the chorio-allantoic membrane of hens' eggs. It is considered that experiments of this nature are now indispensable as they might well provide more direct evidence as to the distinct individuality of the disease, and might thus form the basis of a simple, rapid and economical technique of distinguishing it from the other two exanthemata which it resembles so closely clinically.

I. A. G.

CLINICAL COMMUNICATION

An Equine Case History

V. BERWYN JONES, M.R.C.V.S.
GUILDFORD

The subject was a four-year-old thoroughbred racehorse, a steeplechaser. The animal was well grown but in rather poor condition after two months at grass. The hot summer with dry herbage and excess of flies has not allowed any thin-skinned animals to do very well this year unless they were brought in under cover and fed during the day. This gelding was kicked on the lateral surface of the near fore ulna in early May this year and was hopping lame for about a week with a local swelling approximately the size of half a tangerine. The skin was just broken (about half an inch) and there was a thin, sero-purulent discharge. After three weeks of fomentations, etc., two spicules of sequestrated bone were expressed. The wound then healed, and the animal went sound, although some tenderness remained. When at grass a few beads of serous discharge were observed occasionally. Towards the end of August the horse was brought up from grass and, after treatment for a strongyle infestation, was put into work. At this time the wound was completely healed, the animal was improving in condition and going sound and freely; in fact, it was doing half-speed work when the owner was called away.

In addition to the normal ration the gelding was given 4 oz. linseed oil daily, with about 5 lb. cut grass at 8 p.m. There is no doubt that during the absence of supervision this oil dose was omitted and perhaps the grass ration increased, a very bad attack of impaction and tympanites resulting. This was successfully treated by giving, by the stomach tube, sod. chlor. ʒiv, sod. bicarb. ʒvi, chlorodyne ʒi, ol. lini Oi, hydrarg, subchlor. gr. xxx. However, during the very severe spasms he hurled himself down in the box, beating his head and forehand on the ground a number of times in frenzies of acute pain. Within two hours of the tubing he was normal.

Twenty-four hours later the near elbow joint suddenly swelled; the respirations were hurried, the pulse 50 and the temperature 103°. It appeared that blood poisoning was imminent; the bowels were open and the motions free but not yet formed. After the lapse of a further period of three hours the case appeared to be *in extremis*. In spite of lancing, fomentations and syringing the wound—which only gave a few drops of clear serous discharge—the swelling descended nearly to the knee, had covered

the brisket, depending like a half-melon, and, above, was nearly level with the point of the shoulder. The animal would neither eat nor drink and could not be moved except when lifted over in the box, when it would pivot on the hind legs, both fore being fixed to the ground in a manner reminiscent of an acute laminitis case.

At this point 125 c.c. "Prontosil" was given intravenously. "Prontosil," the new drug that has been generally accepted by our sister profession as approaching specificity in their puerperal fever cases, has received only scant notice in veterinary literature. Prepared by the Behring Institute at Leverkusen, in their laboratories at Elberfeld, in Germany, and marketed in this country by the firm of Bayer, it is described as the di-sodium salt of 4-sulphonamido-phenylazo-7-acetylamino-1-oxynaphthalene-3, 6 disulphonic acid in 5 per cent. solution. Ten minutes after injection shock symptoms appeared, ushered in by rigors of the muscles of the quarters and the masseters. These were so well marked in the latter that they appeared during a spasm to be almost incredibly bulged, the normally flat cheeks assuming a football-like outline. The respirations were now 60, the pulse 60, the temperature 104·5°, and the body and extremities were stone cold. Just before the initial rigors the head, which had been held dejectedly below the knees, was violently shaken as if water had been poured in an ear, and the off hind was lifted and shaken like that of a "foot-and-mouth" beast. Starting at half an hour after injection, the penis was drawn and urine was voided in dribbles and drips in an uncontrolled manner. The normal stance of urination was not adopted, nor was the neck extended as is usual. The penis remained drawn and flaccid and urination continued in this manner for about one hour. Except for the application of warm blankets and rugs and putting on cotton-wool bandages, no active treatment was adopted in order not to interfere with the observation of the effect of the drug. Soon after urination had commenced the animal took a little chilled water and chewed a few handfuls of hay; but it was nearly three hours before surface heat returned. At four hours the temperature had dropped to 102·4° and the horse was picking interestedly at a hay net with a brighter eye and pulse down to 25. Mashes and corn were still rejected.

Twelve hours later the appetite was fairly good; the animal was urinating and defaecating normally, the temperature was 100° F., the pulse 40 and respirations were normal. It was walked round the yard and except for a little stiffness enjoyed the mild exercise.

Three hours later the swelling, which had now become more localised with sharp edges of demarcation about a hand-span around the wound, was probed with a director and about 4 oz. of a thin, creamy, orange-coloured discharge given exit. A rubber drain was then inserted and sutured to the skin. Fomentations and syringing with eusol were continued.

Nine hours later respirations were increased to 36, the temperature had risen to 102·4°, and the pulse was 45. The swelling was again enlarging and the gelding moved over only with great difficulty. Appetite was in abeyance. One hundred and twenty-five c.c. "Prontosil" was again given intravenously. This time, instead of producing shock, it appeared to be of almost immediate benefit. Within 15 minutes the head was up and the eye fuller and brighter, and a mash was accepted and hay eaten with relish. The temperature was, however, up to 103·8°.

No discharge had been noted since the drain was inserted.

After an interval of twelve hours (*i.e.*, the next morning) the temperature was normal, as were the appetite and functions. The swelling extended below the knee, but was not so marked between the forearms. There was a clear synovial discharge, and the drain was left *in situ*. Treatment was by fomentation only. The gelding was very stiff and had not voluntarily moved in the box for 24 hours. Twelve hours later (in the evening) the temperature was 102·4°, the pulse 47, and there was a copious, clear synovial discharge. The drain was removed and a green blister applied around the wound to promote local swelling and closure. In the evening of this day (a Friday) 125 c.c. "Prontosil" was given, there being no reaction. Eighteen hours later, on Saturday, the temperature was 102·5°. There was no discharge from the wound, from the lips of which necrotic muscular tissue was protruding. This was cut away, the wound enlarged, and some necrotic material together with a watery discharge containing inspissated pus, resembling small rice granules, evacuated. The leg was fomented several times daily. The appetite was good.

On the Sunday (twelve hours later) the horse was moving stiffly about the box; weight was being placed on the leg without apparent pain, the swelling was decreasing, and the wound was dressed with B.I.P.P. Liquid paraffin was worked into the skin down to the heel. A very thin discharge, still containing whitish granules, exuded when the leg was flexed on movement. The appetite was very good, the temperature 101°, the pulse 40 and the respirations were normal.

From this day onwards, the case continued to progress favourably. One week later, although the wound had not completely healed, the animal was put to walking exercise, going level and freely.

ABSTRACTS

[A Preliminary Report on the Problem of the Bovine Skin-lesion Tuberculin-reactor. Robertson, A., and Hole, N. H. (1937.) *J. Comp. Path. & Therap.* **50.** 39-57 (1 table, 44 refs.).]

In recent years in the United States of America and Canada numerous observations have been made on a condition in cattle known as "skin tuberculosis." Cases of this disease are detected most frequently in the course of tuberculin testing of herds, the affected animals reacting to tuberculin. Such animals on *post-mortem* examination may show none of the usual lesions of tuberculosis but only single or multiple nodules in the subcutaneous tissue or actually affecting the skin. On histological examination, the nodules are found to have the structure of a granuloma with necrosis and sometimes caseation or calcification. Most of the authors who have described cases have found acid- and alcohol-fast organisms in smears and sections but have failed to cultivate them or infect other animals. Others have isolated acid-fast and non-acid-fast diphtheroid organisms, and others again claim to have isolated tubercle bacilli of the avian type.

Robertson and Hole review the literature on the subject and give a detailed description of twelve cases encountered in England in herds which had been subjected to the intradermal tuberculin test. The majority of the cases came from herds which had been free from tuberculosis for some time. The affected animals had shown consistent, or inconclusive, reactions to the tuberculin test. After very thorough examination of the cases, the authors conclude (*a*) that the skin lesions are the most probable cause of the sensitisation to tuberculin, (*b*) that the sensitisation is not consistently greater for avian than for bovine tuberculins or *vice versa*; neither does the subcutaneous test appear to afford a means of differentiating the skin lesions from true tuberculosis.

The authors admit the possibility of the lesions being due to an atypical form of *M. tuberculosis* but in view of the microscopical appearances of the organisms, certain histological features of the lesions, failure to infect laboratory animals and failure to cultivate the organisms, they are of the opinion that the acid-fast organisms seen probably do not belong to the recognised pathogenic types although they may be associated in a group sensitisation. The acid-fast organisms may not necessarily be the primary cause of the lesion but be secondary invaders of a wound or abscess. It is intended to publish further results and a detailed histological description in a future communication.

C. A. McG.

[The Phosphatase Test for Efficient Pasteurization. Hoy, W. A., and Neave, F. K. (1937.) *Lancet.* ii. 595.]

In 1935 Kay and Neave reported upon the application of a test for milk phosphatase (a natural enzyme of milk) which could serve as an index of efficient pasteurization, since the degree of heating necessary to destroy phosphatase is slightly greater than that necessary to destroy tubercle bacilli.

Using the test for residual phosphatase in "so-called" pasteurized milk sold in London boroughs and certain rural areas, a two-year survey of the efficiency of pasteurization has been made. At the beginning of the survey much of the milk was found to be inadequately heated but there has since been a great improvement in this respect. This improvement has largely been confined to big dairy firms having their own control laboratories, whereas in the case of intermediate and smaller-sized firms the efficiency of pasteurization is still far from satisfactory.

The phosphatase test, which is also suitable for testing "flash pasteurized" milk, is extremely valuable for advisory work in assisting dairy operatives to track down unsuspected faults in their plant.

E. J. P.

* * * * *

[Microscopical Examination of Milk for Tubercle Bacilli: Collection of Samples. Woodhead, S. A. (1937.) *Lancet.* ii. 601.]

Referring to a report by Mary Maitland [abstracted in the *Vet. Rec.* **49.** 835.] on improvements in the microscopic examination of milk for tubercle bacilli, the author stresses the importance of the use of a proper method in collecting samples. The use of quarter samples improves the efficiency of the test. When collecting the samples, the udder should be milked right out, then well massaged (especially any indurated parts) and finally the strippings obtained as the result of massage should be used for examination.

E. J. P.

* * * * *

["On the Epidermic Equine Encephalitis which occurred in the Year 1935 in Japan." Emoto, O., Kondo, S., and Watanabe, M. (1936.) *J. Jap. Soc. Vet. Sci.* **15.** 41-62.]

There occurred in various parts of Japan during the months of June, July and August, 1935, an epizöotic disease among equines in which the symptoms were referable to lesions in the nervous system (encephalomyelitis). The authors believe that this disease is the same as that which was recorded as endemic in Kyusyu (presumably the same as Kiushiu), an island in the South of Japan, as far back as 1898 under the name of "cerebro-spinal meningitis," and from whence it has spread to

other parts of Japan. Early in June, 1935, veterinarians and livestock owners in the island of Kyusyu (Kiushiu) reported cases of a disease in which nervous symptoms were manifest. Within two months the disease spread over the country, reaching a maximum intensity towards the end of July and beginning of August, *i.e.*, when the weather was "abnormally warm and moist." The number of cases diminished during October. About 900 horses were affected and about 33 per cent. of these died. Young horses two to four years old appeared to be more susceptible than older animals, but cases occurred also among the older horses. The incubation period in horses affected under natural conditions could not be accurately estimated, but it is suggested that it may have been one to seven days in some cases. A temperature rise up to 41° C. preceded the appearance of symptoms in some instances. In severe cases the horses staggered, fell down, and in attempts to rise made convulsive or swimming movements. In the advanced stages the horses became quiescent. In the majority of instances the pulse and respiration were not accelerated. Difficulty in swallowing, fibrillar spasms of the limb muscles, amaurosis, paresis of the tongue and lips and continuous or periodic grinding of the teeth were accompanying symptoms.

In milder cases two clinical types were observed, the "sleepy" or "encephalic" type and the "walking" or "spinal ataxic" type. In the former the horse leaned in a somnolent state with a drooping head against any supporting object. A flaccidity of the lips and excessive salivation were observed. In the "walking" type, which appeared to be more common, the horses moved round in circles and there was paresis, or even paralysis of the posterior extremities with retention of urine. Sometimes in severe cases the horses were dead in 24 to 48 hours, while in very mild cases recovery "could be expected."

Infiltrative (lymphocytic perivascular "cuffing," interstitial infiltration, meningitis, etc.), and degenerative (neuronophagia, etc.) lesions in the nervous system of affected horses are described. Sometimes these lesions were more intense in the cord than in the brain. Haemorrhagic lesions in the cord and brain were recorded in some instances.

The authors believe that they succeeded in infecting one horse and several rabbits by intracerebral inoculation of suspensions of the brains of infected horses. They failed to infect guinea-pigs and rats. Their opinion is that the cause of the disease is a "kind of virus." They have not been able to decide whether the infectious agent is one hitherto undescribed, or whether it may not be a virus similar to that of Borna disease or, on the other hand, similar to that of (what for convenience may be termed) the "American" type of equine encephalomyelitis. From the information available it is not possible to help them in their decision, but they state that their study is still "under way," and further light may be thrown on the question of aetiology.

I. A. G.

• • • • •

[The Relation of Vitamin E to the Anterior Lobe of the Pituitary Gland. Barrie, M. M. O. (1937.) *Lancet*. **233.** pp. 251-254.]

The exact mode of action of vitamin E and the rationale of its therapeutic use for the achievement of normal pregnancy are as yet obscure. As a result of vitamin E deficiency pathological changes are produced in the anterior lobe of the pituitary and in the thyroid of female rats and their young. This leads in the case of the pituitary to an impaired secretion of gonadotropic, galactotropic and thyrotropic hormones by the anterior lobe, and the conclusion is drawn that, in the rat, vitamin E is necessary for the normal function of the anterior pituitary.

Female rats which have been fed on a partially deficient vitamin E diet will produce a living litter, which appear normal at first, but which about the 18th to 20th day are revealed undersized and definitely abnormal; three days later severe cases show characteristic carpopedal spasms, and intermittent convulsions leading to death. Examination of such rats shows hypoplasia of the thyroid and degenerative changes in the pituitary. It is suggested that the condition is one of pituitary dwarfism with secondary cretinism.

N. J. S.

ELECTRICAL EUTHANASIA

"By far the greatest step forward in humane slaughter of recent years is to be seen in the export abattoir at Durban where an electrical invention of a Durban veterinarian ensures the humane destruction of every bovine beast," writes Lieut.-Colonel Wakefield Rainey, C.B.E., M.R.C.V.S., in the *Natal Mercury*. "Electrical anaesthesia, in its modern form provides the best form of humane destruction, yet its introduction has been resisted, not only for cattle and pigs, but for dogs and cats, the mournful and dreadful business of slow and distressing chloroforming being preferred to the instant and merciful dispatch of electricity.

"If only all the animal defence societies would cease this squabbling and would all combine to help veterinarians in this matter we could speedily ensure that all domesticated animals used for the food of man, and all dogs and cats not wanted by man, would be humanely dispatched in a way that even human beings, doomed so often to a lingering death, might envy."

REPORT

Uganda Protectorate

[Report of the Veterinary Department for 1936. Poulton, W. F. pp. 35. 11 tables, 1 chart, 1 map.]

After giving the Staff List, the Chief Veterinary Officer reports the general work of the Department. The activities of the staff were mainly concentrated on controlling the worst epidemic of rinderpest the Protectorate has experienced for 20 years. Early in the year rinderpest was introduced into Teso District by illicit cattle movement from Karamoja. [Lack of staff does not permit effective disease control in Karamoja and rinderpest is believed to be endemic.] The disease spread over Teso and into South-East Lango. In various jumps it reached Buganda Province and Busoga District and over-ran most parts of these two areas. In addition, cattle from Belgian Ruanda introduced the disease into Ankole. Eradication was effected chiefly by the use of serum and virus, and to a lesser extent, glycerinised vaccine. Serum alone was also used in some cases to facilitate movement of stock, etc. Coupled with immunisation, strict quarantines were enforced. By the end of the year the disease had been stamped out except for five centres in Buganda Province. Control was complicated by game infection in certain areas. The inoculation mortality in adult stock was 10·6 per cent. It is always adversely affected in areas where trypanosomiasis and tick-borne diseases exist.

Contagious bovine pleuro-pneumonia exists in Karamoja District only. Trypanosomiasis is widespread except in the Eastern Province and Lango District. Stomoxys play a large part in its dissemination, especially among herds in which infected animals have been introduced. As a result, in certain areas the cattle population is steadily decreasing. Anthrax is a serious problem in Masaka and Ankole. Blackquarter causes no serious losses. Foot-and-mouth disease is usually mild, but with the increasing economic importance of stock, more notice is being taken. Tuberculosis exists in Ankole cattle to a serious extent: abattoir returns show an incidence of over 30 per cent. The zebu and karamojan types remain remarkably free, an incidence of less than 1 per cent. being recorded. Rabies exists only in the West Nile District. Eleven cases of contagious pleuro-pneumonia of goats were recorded. Finally, fowl typhoid and other diseases of fowls take their toll.

A considerable amount of glossina investigation and reclamation has been and is being done in South Ankole, as and when the rinderpest situation permits. In selected areas, patches of bush, thought to be *G. morsitans* reservoirs, are cleared. This is carried out in conjunction with controlled grass burning. Although the results are not clear a considerable drop in the fly catches is recorded. Certain freed areas have been experimentally restocked.

Several stock farms are maintained for experiments in breeding and animal husbandry in general. Castration of scrub males is encouraged, as is the correct drying of hides; in this direction little progress will be made until the Government controls the present "chela bela" method of buying. Ghee and butter is made in demonstration centres and stock routes and markets are organised. In the abattoirs, parasitic infections are the main cause of condemnations.

In Appendix I the Senior Veterinary Research Officer first gives information regarding the museum, library and collection of parasites, etc. Production of rinderpest serum amounted to 6,610 litres; rinderpest vaccine, 154,890 litres, and fowl typhoid vaccine, 925 c.c. Routine examinations totalled 28,417.

Owing to the rinderpest situation little research was possible. A new method of rinderpest vaccine preparation, namely, Bennett's glycerinised spleen and gland vaccine (modified), was adopted and successfully used. This gave an absolute immunity in ten days; the immunity was still solid four months later. Some experiments on rinderpest transmission and "blocked out" reactions were conducted. A fatal case of *T. vivax* and *T. congolense* in a dog is recorded. The susceptibility of domestic ruminants to polymorphic trypanosomes is being studied, and it is intended to re-investigate the problem of *T. congolense* transmission by *G. palpalis*. Some interesting experiments are being conducted on East Coast fever and turning sickness; apparently healthy calves, and calves exhibiting symptoms of turning sickness may be carriers of *T. parva* and can infect the transmitting tick. Some feeding experiments with poisonous plants were carried out. Three brains examined for rabies were positive.

In Appendix II it is stated that twelve students are undergoing veterinary training at Entebbe. The numbers are increasing, but rinderpest has seriously interfered with this work.

[It would appear that had the Department been adequately staffed, the disastrous rinderpest epidemic could have been prevented. The Government, therefore, by its short-sighted policy in not supporting the Department and providing sufficient staff, must be held to be directly responsible.]

R. F.

N.V.M.A. Council

Summary of Proceedings of Quarterly Meeting

For his first quarterly meeting of Council as President, Captain Donald Campbell had the gratifying experience of presiding over a "record" attendance, nearly 60 members being present at 36, Gordon Square, London, on Tuesday, October 5th, 1937.

At the outset the Council heard from the President, with much appreciation of his efforts in the matter, a detailed report of his visit to Inverness, as the result of which he had, after consultation with the other officers of the Association, authorised the transference of next year's Congress to Glasgow, where there is certainty of adequate accommodation being available.

The welcome influx of new members then announced, bringing the total membership of the Association within sight of the good round figure of two thousand, is a pleasing index of the increasing tendency to join the "National" on graduation. To augment the efficiency of Divisions as a recruiting ground, the President is to make a personal appeal to prospective entrants from that very important source—an approach which it is hoped will meet with ready and widespread response. In that event, much emphasis will be laid on the notice of motion, given subsequent to the election of the standing committees, to increase their membership beyond the present number of 15: for the consequent growth of Divisional representation to Council will render it even more difficult than it is at present to allocate committee service to all the members of the governing body of the Association.

The report of the Organising Committee revealed that an endeavour is to be made to assist Divisions in arranging new schemes for the provision of free treatment for the sick animals of the poor on a more uniform basis. Recommendations to this end are to be sent down to the constituent bodies for consideration and report.

In view of the special difficulties with which members of the profession are confronted in the matter of jury service, they will appreciate the persistence of the Parliamentary Committee in continuing to press for exemption for veterinary surgeons, the assistance of the Parliamentary Science Committee being enlisted to that end. Under the aegis of the same committee of the Association, steps are to be taken to secure the appointment of a veterinary representative at the Ministry of Health on the immediate ground that the profession is likely to be materially affected by the second portion of the Public Health (Consolidation) Bill, which will deal with foods and meat inspection generally. Nor is the clamant need for the revival of the appointment of Adviser on Animal Health at the Colonial Office to be allowed, if the Appointments Committee can prevent it, to remain in the highly unsatisfactory position in which it has been left since the death of Mr. Eustace Montgomery. Despite the representations made by the Association at the meeting with Lord de la Warr, in May last, the committee had to report that the Secretary of State had again decided against the re-creation of this post and the committee is requesting the opportunity of re-discussing this matter with the Secretary of State himself.

The setting up of a Centralised Veterinary Service figured in the report of this committee, with particular reference to the request made of the Ministry of Agriculture for particulars of the new scales of salaries to be applied thereto. In this connection, the effective function of the new "Negotiations Committee" was the subject of some enquiry by members of Council, who received the assurance—as also evidenced in the report before them from that Special Committee—that everything possible is being done to expedite activity. The section in the report of the Finance and General Purposes Committee also relating to the proposed centralisation of veterinary services, with particular reference to the issue to both Houses of Parliament of the N.V.M.A. Report on "The Veterinary Profession and its Organisation for the Control of Animal Diseases," kept the report of this committee under discussion for an hour or more, as will be revealed in the more detailed account of the proceedings to be published in our next issue.

In view of the far-reaching issues involved in respect both of finance and autonomy, it is no matter for surprise that the committee were unable to recommend the Council to act on the suggestion that a member of the N.V.M.A. should automatically become a member of the Division in the locality in which he resides either permanently or temporarily, without the payment of any further subscription, by virtue of the fact that he is already a member of the "National."

Reference already has been made in these columns to that significant new feature of Congress week, a gathering of overseas members, and the committee heartily endorsed the proposal, emanating from that meeting, that the Council of the N.V.M.A. should be asked to appoint an Advisory Committee on Overseas Services, whose function it would be to advise the Council on all matters affecting the general welfare of members serving overseas. This valuable addition to the Advisory Committees of the N.V.M.A. is to be a sub-committee of the Appointments Committee, and its personnel is to be chosen by that committee.

So many of our readers appear to be unaware of the action taken by the Association in the pressing matter of the measures to be adopted to protect animals against air-raids, that we reproduce forthwith the reference to this question contained in the report of the committee: "A letter was read from the Air-Raid Precautions Department, addressed to the President, enquiring whether, if invited, the Association would nominate a representative to serve on a committee whose function would be to investigate the protection of animals against air-raids. The committee approved the President's action in securing the agreement of Mr. Brayley Reynolds, as Chairman of the Association's Air-Raid Precautions Committee, to act as the Association's representative in the event of an official invitation being received from the Home Office."

From the Veterinary Officers and Public Health Committee came the pleasing intimation that the Gloucestershire County Council had discontinued charging a fee for the attendance of the Chief Veterinary Officer when tuberculin tests are made by a private practitioner for the purposes of the Milk (Special Designations) Order. The setting up of the new State Service, of course, impinges, and very largely, on the province of this committee, who are to urge the Ministry of Agriculture also to take over, as far as possible, the non-veterinary staffs at present working with the veterinary services in the counties and county boroughs and that arrangements should be made for any personnel, veterinary or otherwise, who become supernumerary through the passing of the Agriculture Act to be absorbed by the local authorities or government departments.

After prolonged experience of various experiments designed to provide that the interests of Congress of the Association and of the profession should be best served in so vital a matter, the Council has now decreed that the choice of subjects of papers to be presented to Congress, of their authors and of the openers of discussions, shall be undertaken by the Editorial Committee and their suggestions passed on to the Provisional Committee for their consideration, the committee to be empowered to deal with the papers in such a way as to ensure their being worthy of presentation to the Annual Conference of the N.V.M.A.

FIFTY-TON PRODUCTION FRIESIANS

The British Friesian Cattle Society has decided to continue the Society's offers of herd average awards for registered Friesian herds obtaining highest average milk yields in recording societies. Certificates were ordered to be signed respecting 15 further animals that had produced more than 50 tons (11,200 gallons) of milk in the lifetime, bringing to 150 the total of such British Friesian R.M.L. cows.

N.V.M.A. DIVISIONAL REPORT

Western Counties V.M.A.

PRESIDENT'S ADDRESS AT BODMIN MEETING

A meeting of the above Division was held at the Royal Hotel, Bodmin, on Thursday, June 17th, at 2 p.m.

The President, Mr. P. W. Bloye, M.R.C.V.S., occupied the Chair and the following members signed the attendance book: Messrs. Bloye, R. Barons Nelder, L. E. Perkins, J. Forbes, R. R. Willing, C. R. Parsons, J. Willis Thwaite, C. V. Watkins, W. L. Richardson, H. W. Townson, F. T. Harvey, C. Crowhurst, A. R. Smythe, W. H. Chase, C. Masson, R. H. Smythe, J. Dyson, D. S. Barbour, Miss B. A. Hutton, Colonel Head and Mr. S. J. Motton.

Apologies for absence were received from Sir F. Hobday, Majors Dunkin, Ascott and James, Messrs. E. C. Bovett, E. R. Edwards, W. Tweed, R. G. Saunders, Irwin, Kauntze, Esmond Brown, Urquhart, H. K. Roberts, G. Harvey, C. Head, Stephens, Fraser and D. A. MacPherson.

The minutes of the previous meeting, having been published in the *Veterinary Record*, were taken as read.

Election of New Member.—Mr. D. A. MacPherson, B.Sc. (EDIN.), M.R.C.V.S., was unanimously elected a member of the Division.

Presidential Address

Mr. Bloye now delivered his Presidential address, which was as follows:—

First of all, let me thank you for the honour you have conferred upon me in electing me as President of the Western Counties Division of the N.V.M.A. for the ensuing year. In accepting this position, I am deeply sensible of the high standard set by the long list of past Presidents, but I venture to express the hope that with the assistance of our esteemed Secretary and with your co-operation and support I shall be able satisfactorily to carry out the duties imposed upon me. Tradition has it that one of the first duties that falls to the lot of a newly-appointed President is to deliver an inaugural address, and in the few minutes which I have at my disposal for this purpose I propose to review and quite briefly comment on some of the aspects which may confront us in our daily routine.

Prior to the War most veterinarians enjoyed a strenuous life of hard work dealing almost entirely with the larger animals. Within the last few years, however, the mechanical age has

*Received for publication September 27th, 1937.

overtaken us, and one of the results of this has been to change the veterinary outlook considerably. The profession in recent years has made great strides: science, research and skill, coupled with increased knowledge, have further aided progressive advancement with the result that many of the old orthodox ways of diagnosis and treatment have given place in favour of more up-to-date methods.

In order to keep abreast of the times, enormous sums of money have been spent at our training centres by way of rebuilding or improvements and making these institutions worthy of the dignity of their position. One of the results of better teaching facilities being available is that veterinary education has generally benefited and this fact is reflected in the present-day graduate. In latter years the profession has been graced by lady members, truly a sign of altered times.

While being in complete agreement with the assertion that the right person will always find his or her level, I do view with concern the large numbers who are awaiting admission or are passing through the colleges. Until recently there was no difficulty in absorbing the slow, steady flow of graduates into our midst; to-day, however, students are qualifying in such numbers that the time cannot be far distant, unless some fresh outlet can be found, when the profession will tend to become overcrowded. The extended course with the tightening up of the preliminary examination may, however, have some influence in exercising control in the number of graduates.

The large-scale campaign which the Government proposes to initiate for the eradication of animal diseases is bound to affect us, some seriously, as it involves centralisation of public veterinary services.

In spite of these facts I am sufficiently optimistic to regard the outlook as distinctly favourable. The possibilities the career now offers are decidedly more attractive than formerly. The choice that is open to a veterinary surgeon is no longer confined to the Ministry, Army, Colonial Service or general practice, for in addition to these, by the creation of so many excellent appointments under various authorities the more fortunate of us are, if we are so bent, able to secure good positions offered by our counties, cities and towns.

The difficulty that some veterinary surgeons experience in obtaining the services of a qualified assistant is no doubt due to the fact that many of those available prefer to wait and seek one of the more sheltered, sure posts referred to above even at a lower salary, rather than accept a better paid private position involving real hard work. Unfortunately many of these latter situations do not lead to any marked advancement by the holder either being taken into partnership or eventually succeeding to the practice, whereas the former stand a most reasonable chance of securing promotion or betterment in some form or other.

Most of the members of this Association have to depend largely on private practice as a means of existence and it is those who are employed in this particular class of work who have suffered in some way or another as the result of the fast-moving age in which we now live. The countryman who in the past used to rely largely on either cattle or on horse and cattle practice for his livelihood, has been seriously affected partly by the times and partly by the steadily increasing number of veterinary officials employed by the county authorities. The duties imposed on these officials are such that by their collective action they have replaced to a considerable extent the country practitioner, who no longer plays the part of adviser and friend to the agriculturist. He further foresees in the near future not only the slow vanishing of his independence, in these days of too much free advice, but also of his being gradually squeezed out. Attempts are being made, however, in some counties to try and remedy this state of affairs by retaining the services of a number of part-time veterinary surgeons to work under a whole-time official.

Unless some such scheme can be generally agreed upon and adopted, the needs of the farming community, particularly in outlying districts, cannot be adequately met, for it is impossible in some instances, and indeed unreasonable, to expect that a practitioner can remain in his stronghold when he has been deprived of half his earnings through no fault of his own. Surely the march of progress was never intended to be so rapid as to impose such hardships on individuals as these.

City and town veterinary surgeons have to admit the great loss they have sustained in the passing of the horse from the streets. In some instances, however, small-animal practices, with their countless opportunities, have sprung up and taken their place, but I question how many of these can register a net gain on the yearly turnover when their figures are compared with those of their predecessor.

General veterinary education has gradually taught the layman to become more and more "animal minded," and this interest in the welfare of animals has lately been stimulated by the recent Parliamentary debates in connection with the Export of Animals Bill and the Cinematograph Films (Animals) Bill, both of which, apart from prohibiting any act of cruelty, are calculated to raise the level of the profession in the eyes of the public. For years the public have failed to recognise the important part the profession has played in safeguarding not only the health of the nation by the close attention it has given to the milk and meat supplies of

the country but also in the preservation of the health of the animal world by its constant supervision in the prevention of disease. One of the scandals that still remains, however, is the number of cities and towns that allow their meat supplies to be examined by a sanitary inspector, instead of employing a person who has been specially trained in animal pathology.

Public health is constantly demanding attention in our daily routine, and in latter years more so with the re-organisation of the milk industry. This factor has done more than anything else to bring the present position of the Veterinary Health Service to the front and sway public opinion towards the value of the veterinary surgeon in this particular sphere, for it can be truly said that never in our history has the veterinary profession held such a prominent place in our national life as it does to-day.

It is, therefore, up to us, when carrying out of our duties, to see that no action be committed which might lead to possible friction with our brother colleagues and so tend to make a breach in our ranks; not only would this lower the dignity of the profession but it is almost bound to lead to disaster in the end.

The R.S.P.C.A., with the approval of the N.V.M.A., have instituted through their headquarters and local organisations, a number of animal clinics throughout the country, under qualified supervision, with a view to providing treatment for the sick and injured animals of genuinely poor persons who are not in a position to pay a reasonable fee to a veterinary surgeon, for without such a scheme many of these animals would undoubtedly be taken to some animal shop or dispensary and would in all probability receive treatment from the hands of the unqualified.

Unfortunately, each local branch of the R.S.P.C.A. is a self-governing unit and consequently it is impossible at present to enforce the inclusion of veterinary representation on its committee. A further regrettable fact is that much of the money which always seems to be available for animal charities often does not get used to the best advantage. It is pointed out that the animal of a poor person has as much right to professional services as the one whose owner is in a position to pay a substantial fee; therefore the establishment of a chain of clinics under qualified supervision has not only drawn to a veterinary surgeon the attention of a particular class who, in other circumstances, would not have known of his existence but has helped in suppressing the unqualified who used to depend largely on the poorer class for support.

Divided opinions are held as to whether the provision of approved animal clinics is harmful to the qualified person. Clinics if properly run are, in my judgment, not detrimental to the practising veterinary surgeon, provided that two main conditions are observed. Firstly, that thorough investigation be made of the applicant's circumstances—attention and treatment should only be given, except in very exceptional cases, on finding that the owner is unable to pay a reasonable fee to a veterinary surgeon—and, secondly, that a qualified person should always be in attendance during the hours the clinic is open. This last provision is necessary, in my view, mainly because it prevents unskilled treatment being given to animals that may be brought to an approved clinic during the many hours some of these establishments are open, but have no qualified person in attendance, except for a few hours weekly.

This age is largely a "hypodermic" one, but some control is badly needed in the distribution of vaccines. The sale of biological products should be restricted to qualified persons and the selling of such to chemists for resale to the public should be prohibited. The use by lay persons of certain uncontrolled distemper vaccines has unquestionably led the outsider, in some instances, to the belief that genuine inoculation with approved products is of no real service. The recent introduction of feline distemper (enteritis) prophylactic vaccine is a further step towards reducing the very serious mortality which periodically occurs in this animal, but owing to its cost and the comparatively short period of immunity which it confers, its use on a large scale is at present somewhat hampered. What is badly needed is a reasonably cheap vaccine or vaccines which will give a lasting protection against the various forms of influenza met with in the cat.

A subject which is extremely important and one which, up to the present, has not received sufficient consideration is that of the effect of gas warfare on our patients. It is most sincerely to be hoped that our services may not be required in this connection, as the possibilities are too awful to imagine—but it is our duty, and the public would expect it of us, to be in a position to advise them on anti-gas protection and treatment should occasion arise.

It is said that we as a profession are notorious as being bad book-keepers. In some cases there may be some truth in the saying, but in these times when the Income Tax authorities are out for every penny they can extract from us, few can afford to neglect the business side of their undertaking. To those of us who do not employ a book-keeper, the entering up and keeping of accounts by any of the various simple systems, coupled with the filing of a complete list of prescriptions, letters, certificates, receipts, etc., is not so very tedious or difficult a task, if one is at all "office minded." In these days of rush and bustle a certain amount of daily office routine is an essential and the importance of being able to

refer to or turn up, at once, any wanted prescription or particulars cannot be too strongly emphasised. In my opinion, therefore, in order to make a real success of our work, it is necessary that we should possess an equal share of professional skill, tact and business ability.

In passing, I may add that there are a number of subjects including State or panel service of some kind, the compulsory pasteurization of milk, the bird and poultry industry, the very vexed question of small-animal euthanasia and many others, which no doubt ought to be enumerated as being worthy of mention and comment in a short résumé of this nature, but the pressure of time prevents me from adding any further observations in this connection.

Before concluding my remarks, may I be permitted to draw your attention to the National Veterinary Medical Association. The importance of everyone engaged in veterinary work becoming a member of the "National" cannot be too strongly emphasised. Equally so, is it most desirable that all practising members should join their local division which is part of the parent body. The apathy which seems to exist in these directions always baffles me, for how can our profession, which is only a small one, expect to make real headway and progress unless our National Association has the support of all the members on the register?

May I further ask you to endeavour to attend our meetings whenever possible, even at some slight personal inconvenience, for in these days of many complexities the chances of airing our views and expressing our differences are all too few and at no better place can this be done than at our Divisional meetings. The many difficulties that arise when distance and single-handed practices have to be considered are all well known but I can assure you that your attendance is much appreciated and the effort is well worth while.

If I may crave your indulgence for a few moments more, I should like to mention the name of two professional charities both of which are worthy of your support. I refer, of course, to the Victoria Veterinary Benevolent Fund and the National Veterinary Benevolent and Mutual Defence Society. There is no need, I am sure, for me to say anything about the magnificent work both these organisations perform, but I do wish to remind you how impossible it is for either of them to carry out their obligations when their activities are so seriously hampered for the want of funds.

Finally, may I thank you for the patient hearing you have given me and express the sincere hope that this Division may have a successful and interesting year.

Paper.—The next item on the agenda was the presentation of a paper, by Mr. L. E. Perkins, on "Some Notes on Anthrax from the Administrative Stand-point." The discussion was opened by Mr. Willing.

The meeting concluded with a vote of thanks to the President for his address and to Mr. Perkins for his paper. [The paper is reproduced at the commencement of this issue, together with a report of the discussion and of the essayist's reply.—*Editor.*]

S. J. Motton, *Hon. Secretary.*

R.A.V.C. OLD COMRADES' ASSOCIATION

ANNUAL REUNION DINNER AND GENERAL MEETING

The Seventeenth Annual Reunion Dinner of the Royal Army Veterinary Corps Old Comrades' Association was held at Anderton's Hotel, Fleet Street, E.C.4, on Friday, October 1st, 1937, at 7.30 p.m., the attendance being a little below the average.

After the Loyal Toast, the Chairman, Major-General W. S. Anthony, C.B., C.M.G., Colonel Commandant of the R.A.V.C., in proposing the toast of "The Association," said: "We meet to-night for the seventeenth consecutive year for the Annual Dinner of the Association. I do not omit to say 'consecutive,' for that word is proof of the loyalty of Old Comrades and their steadfast belief in the worth of those principles for which the Association stands. We have need of loyalty in these turbulent days, when the world teems with unrest, when neither liberty nor order nor the pledged word are honoured. Since we forgathered here twelve months ago, grave matters of historic importance have tested the stability of the State and Empire. Those events now belong to history and there we leave them. Our only contact with them now and here is to use them in proof that when men are true to the best that is in them, when they are loyal to the traditions of their country, then are they given that faith that moves mountains and obstacles and difficulties which have in them the germs of strife are overcome without disturbing peace and order or depriving any man of his due.

"I feel I ought to mention two events of the past year which concerned the Association and where it was represented. One was the Coronation Service at Westminster, to which I was summoned as Colonel Commandant of the Corps and when seats were provided for representatives of the Association to see the procession. The rites and ceremonies attaching to the Coronation have been in use for 1,000 years, and we of this day showed ourselves as loyal to the Throne as any generation that has ever hailed a sovereign at his crowning.

"The other event I mention is the parade of ex-Service men in Hyde Park, when ten of us, on behalf of the Association, marched past the King. Eighty thousand men mustered on that

parade: not young men or very active men or men boisterously enthusiastic, but quiet men, remembering many things; grateful men, glad to meet on parade again, men sure of themselves and of what they had done. There were other men there, too, who did not march past the King—men on crutches, men wheeled about on chairs, and there were women as well, scores of them, grave, thoughtful women wearing glorious medals. It was good to be there and see them, good to trust the years lightened their burden, good to see and join in the general good fellowship, good to hail the King and Queen and to hear the bands and to march past. We may regard this great occasion according to the mood of the moment or the bias of our natures: mask it with jest or idle word, but in the end we must think that something massive and tremendous, something deep rooted and sure brought those men to that parade, and part of that something is loyalty. We may say of the past year that it was one when loyalty, above all civic virtues, was needed. Happily it was to hand in abundance and we here, being loyal to ourselves, helped and will help in our own measure to maintain and enlarge that wider loyalty on which rests the security, well-being and happiness of us all." (Prolonged applause.)

Replying, Major-General Sir John Moore, K.C.M.G., C.B., said he had been intimately connected with the Association for many years, and he asked the assembly to drink the health of the President.

The toast was drunk with enthusiasm and the Chairman was accorded musical honours.

In addition to the Chairman and Vice-Chairman others present were: Brigadier H. S. Mosley, D.S.O., Colonels A. G. Todd, C.B.E., D.S.O., W. H. Walker, D.S.O., O.B.E., Lieut.-Colonels A. E. Clarke, O. S. Fisher, O.B.E., P. J. Simpson, D.S.O., T.D., J.P., J. J. M. Soutar, O.B.E., G. E. Tillyard, O.B.E., Majors F. J. Andrews, B.Sc., R. M. Bamford, O.B.E., T. E. Campey, M.B.E., D. A. Gillmor, J. Harrison, J. B. A. Hare, C. W. Heane, R. H. Knowles, S. W. Marriott, O.B.E., J. J. Plunkett, O.B.E., A. W. Reid, T.D., G. Williamson, O.B.E., Captains B. H. Benson, H. H. Brodie, C. Budd, M.B.E., J. V. Ives, M.C., A. G. Ralston, A. J. Warburton (Hon. Secretary and Treasurer), Lieut. W. E. Turton, Mr. G. W. Gibson, Messrs. A. G. Alderman, M. F. Absolom, W. Allsopp, E. P. Biles, F. Brealy, L. Brain, C. Brewin, H. Briddes, H. Bridger, G. Brown, J. Clare, H. C. Doe, E. R. Gregory, W. H. Harrison, J. Harrigan, A. J. Harvey, H. M. Harker, L. F. Hayes, R. Hickson, P. J. Holland, A. Henderson, T. W. I. Anson, J. Kinsella, J. W. Leigh Lye, E. B. Leeves, W. T. Lewis, L. Maw, W. H. Mundy, A. T. Murrell, D. F. Maccabe, F. Nash, E. J. L. Norman, M.R.C.V.S., P. McDougall, H. J. Reavell, J. C. Renwick, G. Sayer, E. E. Scott, M.R.C.V.S., G. Sillibourne, J. L. Shore, C. Sisley, J. W. Shoesmith, A. G. Wicks, H. White, H. M. White, R.S.M. C. A. Drew, Staff Sergeants H. Hamlin, H. L. Spencer, N.C.O.s and men No. 1 Depôt Section, R.A.V.C., R.S.M. J. E. Wood, Staff Sergeant L. Dyer, N.C.O.s and men No. 2 Section, N.C.O.s and men No. 3 Section, Tidworth, Sergeant-Major P. G. Briggs and N.C.O.s School of Farriery and Royal Army Veterinary School.

Apologies for inability to attend were received from Major-General Sir Layton J. Blenkinsop, K.C.B., D.S.O., Major-General J. J. B. Tapley, C.B., D.S.O., Brigadier A. J. Williams, D.S.O., Colonels H. E. Gibbs, D.S.O., H. J. Holness, D.S.O., C. A. Murray, Lieut.-Colonels W. A. McDougall, D.S.O., O.B.E., E. G. Turner, D.S.O., Majors A. A. Pryer, J. Bell, Messrs. Richard Lumley, J. S. Osborne, W. C. Pepperell, J. Pullman, T. Rourke, H. J. Stockton, H. E. Tott.

A programme of music was rendered by Mr. A. C. Ballinger's Trio during the evening.

Annual General Meeting

The Annual General Meeting was held prior to the Dinner with the President, Major-General W. S. Anthony, presiding.

The minutes of the last meeting were read and confirmed, also the minutes of the Committee of Management held on September 2nd, 1937.

A Statement of Accounts was presented by the Hon. Secretary and Treasurer, which showed a balance similar to that of the previous year.

The Hon. Secretary, in his report, stated that 30 ex-R.A.V.C. men had been found employment during the past year. The next Annual General Meeting would be held at Anderton's Hotel, Fleet Street, E.C.4, on Friday, September 30th, 1938, at 6.30 p.m., the Dinner to follow at 7.30 p.m.

The Association was represented at the Coronation of His Majesty the King by the President, and five members were provided with tickets and ten members were present at the Royal Review held in Hyde Park on June 27th, 1937.

The Secretary was granted an honorarium of £20.

Votes of thanks to the Committee of Management and to Major-General Anthony for so ably presiding brought the meeting to a close.

A. J. Warburton, *Hon. Secretary.*

PARA-CRESOL FROM THE URINE OF PREGNANT MARES

In a letter, published in *Nature* (August 28th, 1937), P. G. Marshall states that Burrows, Cook *et al.** have recently isolated *p*-cresol, along with certain ketones of the sterol group, from the urine of a man with a malignant tumour of the adrenal cortex. The urine was submitted to an initial hydrolysis by boiling with hydrochloric acid, and 0·75 gm. of *p*-cresol was isolated from the non-ketonic phenol fraction.

P. G. Marshall adds that at the Biochemical Laboratory, British Drug Houses, Ltd., a similar observation has been made in regard to the urine of pregnant mares. Approximately 110 gm. of pure *p*-cresol, containing no detectable trace of *o*- or *m*-isomeride, was obtained from 400 gallons of mares' urine, which had been submitted to hydrolysis—a considerably higher proportion than that reported by Burrows, Cook *et al.* for a pathological specimen of human male urine.

*Burrows, Cook, Roe and Warren. (1937.) *Biochem. J.* 31. 950.

FOURTH INTERNATIONAL GRASSLAND CONGRESS

GREAT BRITAIN, 1937

As readers will be well aware, the "Grassland Congress" was this year held in July in Great Britain under the Presidency of Professor R. G. Stapledon, of Aberystwyth. Unfortunately, the veterinary profession in Britain is not represented in the list of contributors, and the present reviewer, who hoped to have attended some of the meetings, was prevented from so doing.

Most of the papers and discussions will ultimately be published *in extenso*, but in the meantime only abstracts of the more important of these are available. Consequently, this account, which is inserted as a means of indicating to our readers the main scope of the Congress, must perforce be along general lines only.

After the meetings held at Aberystwyth, the members took part in an extended visit to grassland pastures in many parts of Wales, England and Scotland. They were thus enabled to obtain a very good idea of the present position of grass and grassland management in Great Britain.

The list of contributors of papers includes names which are already historically famous and almost every country in the world where grass is important was represented by one or more contributions. In this connection it is worthy of note that Great Britain is prominently represented, and many of her contributions to the now enormously important subject are among the most noteworthy.

Some of the papers are concerned principally with the purely botanical aspects of plant breeding, plant genetics and plant nutrition, and since such are highly specialised, readers particularly interested in them are referred to the original papers which in the course of time will be obtainable from the Joint Secretaries of the Congress at Aberystwyth.

Each grassland country has its own particular set of problems, depending upon local climatic and geographic conditions, so that many of the papers, while intensely interesting, can have little or no application in this country. Brief reference may, in this connection, be made to the gigantic problems facing America, where soil erosion and its attendant losses have called into being the Soil Conservation Service, which is now operating in 156 different special centres of about 25,000 acres each and which exercises some degree of control over several million acres in other areas. Successful results are following rotational grazing, reduction of livestock, increase of soil fertility, reseeding with new or native grasses and legumes, conservation by contour furrowing, diversion of flood waters, irrigation and weed control. The Soil Conservation Service schemes are being copied by adjacent farmers with advantage. The seriousness of the problem can be judged from the statement that nearly 6 per cent. of the land is affected by erosion and threatens to become worthless if neglected.

In several papers the mutual benefit of sowing a legume (clovers, peas, lucerne, etc.) with the grasses forming the principal population of the pasture, is stressed. A. I. Virtanen, of Finland (whose name will always be associated with the "A.I.V." method of ensilage by using mineral acids), shows that the legume so sown actually excretes nitrogen compounds into the soil while the plant is growing, and these are not degradation products from decomposing proteins, but are actual excretions of amino-acids which can be utilised by non-legume plants to advantage, while the removal of the excretion from the soil greatly benefits the legume which produces it. An optimum legume : non-legume ratio can be determined, which will have an important bearing on the seeding of pastures when further work shows what this optimum ratio should be. It is hardly necessary to mention what profound effects this knowledge may ultimately have in relation to the problems of over-growth of wild white clover and "clover scouring" in lambs and other young animals. On the same general theme Kirk shows that if lucerne is sown with timothy, meadow grasses, and *Bromus* sp., and given proper management, it can persist in a permanent pasture far longer than was formerly believed possible. This is an application which might be of benefit in some of the thin sandy soils of parts of East Anglia where cereal grasses alone are not satisfactory.

An interesting point is brought out by Klapp, of Germany, who shows that while a sward may withstand *mowing* up to four times in a season without marked diminution in yield, the same sward can withstand *grazing* up to eight times per season. The explanation appears to depend upon many other factors than the mere action of treading, soil consolidation, biting, etc., by animals. The effects upon the performance of the root system, formation of new leaf, exhaustion of root reserves, etc., are much more severe when mowing is practised. The possible effects of constant cutting upon the yields from land reserved for grass drying operations, must be seriously considered. The subject of artificial grass drying, as would be expected, receives very considerable attention. Woodman of Cambridge, Roberts of Bangor (whose recent publication was extensively reviewed in our issue of September 11th [page 1184]), Watson, of Imperial Chemical Industries, and others discuss this development from different aspects.

Among other interesting papers presented to the plenary session, is one from Sweden by Osvald, which indicates that grassland management in that country has made much progress

recently. New strains resistant to disease have been produced and are replacing the older, less useful, types; grass is now cut for hay at an earlier stage than formerly with consequent improvement in nutritive value, more elaborate care is expended upon pastures, and the use of arable land more frequently for grass production results in the production of a first class winter food either as hay or as dried product. These effects will doubtless be shown in an improvement in the quality of hay imported into Britain from Sweden.

In so far as specific information regarding the quality of British grazings is concerned, it is perhaps gratifying to note that little evidence has been found of mineral deficiency which is severe enough to produce definite symptoms of deficiency disease in animals. At the same time, on certain rough grazings evidence of phosphorus insufficiency as a contributory cause of general unthriftiness among sheep is adduced.

In the sections devoted to nutritive value of pastures, yields, economics and fodder conservation, one gains the impression that the attention of agrostologists is still being occupied in endeavouring to reach a uniform method of comparing pasture with pasture in terms of the amount of animal product per unit area. The special *ad hoc* committee set up at the Third Congress to investigate this problem has not yet reached a uniform set of standards, but has made progress, and thorough discussion is invited.

These notes may perhaps serve to give some indication of the variety of aspects of grassland management covered by the deliberations of the Congress. They are not by any means comprehensive, and for details the reader is referred to the full volume of the proceedings to be published shortly.

CONSTITUENTS OF VITAMIN E CONCENTRATES FROM RICE- AND WHEAT-GERM OILS

A number of substances separated from the unsaponifiable fraction of rice-germ oil (which has high anti-sterility, vitamin E, activity), together with some of their derivatives, are mentioned by Dr. A. R. Todd, Dr. T. Bergel, H. Waldmann and T. S. Work, in a letter to *Nature*, published on August 28th, 1937. Most of these compounds are biologically inactive. An aliphatic mono-unsaturated alcohol containing approximately 20 carbon atoms is considered by the authors of some significance, as a possible simpler derivative of the tocopherols (alcohols of approximate formula $C_{29}H_{50}O_2$) which have been shown to possess vitamin E activity.

* * * * *

Alta Clover, prize Holstein cow of Pieter Poth, a Clarksburg (Virginia) farmer, has given birth to sextuplets. There are five heifers and one bull—four spotted black and white and two nearly all white. All six are fully developed and healthy.—*Meat Trades Journal.*

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Oct. 25th.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1, 4 p.m.

Oct. 27th.—Meeting of the Western Counties Division, N.V.M.A., at Taunton.

Oct. 27th.—Meeting of the Comparative Section of the Royal Society of Medicine, at 1, Wimpole Street, W., 5 p.m.

Oct. 28th.—Meeting of the South-Eastern Division, N.V.M.A., at Maidstone, 3 p.m.

Oct. 29th.—Yorkshire Division, N.V.M.A., Annual General Meeting at the Hotel Metropole, Leeds, 3 p.m.

Nov. 3rd.—Meeting of the Lancashire Division, N.V.M.A., at Liverpool, 2.30 p.m.

Nov. 9th.—**Royal Veterinary College: Opening of new buildings at Camden Town by His Majesty King George VI.**

Nov. 12th.—Annual Dinner, Central Division, N.V.M.A., May Fair Hotel, W.1.

Nov. 13th.—Annual General Meeting of Scottish Branch, N.V.M.A., at Glasgow.

Nov. 22nd.—D.V.S.M. Examination begins in Edinburgh.

Nov. 30th.—All changes of address to be sent to the Registrar, R.C.V.S., for inclusion in the 1938 Register.

Dec. 2nd and 3rd.—R.C.V.S. Written Examinations.

Dec. 7th.—R.C.V.S. Oral and Practical Examinations begin in Dublin.

Sept. 5th-9th, 1938.—Annual Congress, N.V.M.A., at Glasgow.

* * * * *

N.V.M.A. Congress Week, 1938

We are able to announce that the week during which the National Veterinary Medical Association will hold its 1938 Congress in Glasgow will be from September 5th to 9th, and we trust that all members whose wise habit it is to think well ahead in respect of their summer holiday arrangements will make a careful note of the fact. In this connection, they may be reminded of the fine additional attraction that next year's conference centre has to afford in the great Empire Exhibition, which takes place from May till October, and in the pageantry of which the many-sided achievements of the British Commonwealth will be commemorated brilliantly and impressively.

A NEW AND POTENT ANTISEPTIC

'MEFAROL' CONCENTRATE

TRADE MARK

CLEAR • NON-IRRITANT • PRACTICALLY ODOURLESS

☆ EXCEPTIONALLY ECONOMICAL

Although 'Mefarol' is of very low toxicity, the disinfectant action of the 1% solution is equal, and in some respects superior, to that of corrosive sublimate.

For use in

SURGERY, GYNÆCOLOGY. OPERATIONS AND THE DISINFECTION OF HANDS ALSO FOR CLEANSING INFECTED AND SUPPURATING WOUNDS

Issued in bottles of ½ pint, 1 pint and 1 quart.

'MEFAROL' IS MANUFACTURED IN GREAT BRITAIN

BAYER PRODUCTS LTD.
AFRICA HOUSE, KINGSWAY, LONDON, W.C.2

Dr. Burdizzo's Bloodless Castrators

For Lambs, Calves, Bulls, Pigs. No blood. No risk of poisoning. Simple. The patent Dr. Burdizzo Cord Stop feature ensures retention of cord.

Patent knee rest attachment illustrated frees one hand to hold the cord.

PRICES

Cord Stop Models		Plain Jaw Models	
9 in.	19 in.	8 in.	19 in.
42/6 up to	**57/6**	**32/-** up to	**53/-**

Knee Rest 7/6 extra.

Write for the Burdizzo Catalogue.

The Cooper-Stewart Engineering Co., Ltd., 136-7 Long Acre, London, W.C.2.

Works - Albert Road, Hendon

CROWN SCIENTIFIC REMEDIES

DANISTOL

(Marek's derivative of Male Fern)

The Standard Specific for

FLUKE OR LIVER ROT

(Distomatosis)

IN SHEEP OR CATTLE

after 16 years, Marek's DANISTOL remains the only remedy for DISTOMATOSIS which can be fully relied upon for safety and efficiency under all circumstances.

Specially favourable terms are now quoted to veterinary surgeons using large quantities.

THE CROWN CHEMICAL CO., LTD.
120, 122, Victoria Street, London, S.W.1

'NEMA'
Worm Capsules

(P., D. & Co.)

TETRACHLOR-ETHYLENE is an effective anthelmintic for the removal of roundworms from dogs and silver foxes, roundworms from pigs and poultry, and stomach worms from sheep and goats. Practical trial has shown that a single administration in proper dosage will remove from 95 to 100 per cent of these intestinal parasites.

The effectiveness of tetrachlor-ethylene as an anthelmintic for veterinary purposes was first demonstrated by Hall and Shillinger of the U.S.A. Department of Agriculture and has been amply confirmed by several years' experience, both in the laboratory and in general practice.

"Nema" Worm Capsules (P., D. & Co.) contain chemically pure tetrachlor-ethylene, and are tinted with a harmless dye to render them distinctive. The capsules are supplied in various sizes, to enable the dose to be graded according to the weight of the animal treated, as follows:—

No. 188 contain 0·2 c.c. and are suitable for puppies, toy dogs, cats and fox-cubs.

No. 191 contain 0·5 c.c. and are suitable for small pigs, half-grown silver foxes, young chickens and young turkeys.

No. 187 contain 1 c.c. and are suitable for small pigs, small dogs and adult fowls.

No. 189 contain 2·5 c.c. and are suitable for pigs and lambs of 50 lbs. weight, and medium-sized dogs.

No. 190 contain 5 c.c. and are suitable for pigs and sheep over 150 lbs. weight, and for large-sized dogs.

Full particulars will be furnished on request.

Parke, Davis & Company

50 Beak Street, London, W.1 ∴ Laboratories: Hounslow, Middlesex

Inc. U.S.A., Liability Ltd.

And when the wonders of the Exhibition have been explored the beauties of Scotland await discovery: the Firth of Clyde, Loch Lomond, the rugged and romantic west coast—many places famed in song and story lie within easy reach of Glasgow.

* * * * *

PERSONAL

Honorary Degree for Professor Dalling

The appointment of Mr. Thomas Dalling to the Chair of Animal Pathology at Cambridge University was particularly well received in the profession for, during his work at the Wellcome Physiological Research Laboratories at Beckenham, Mr. Dalling had given good evidence of high ability to organise research work and help the profession in matters of policy. Our readers will, therefore, be pleased to note that at the graduation ceremony held at Cambridge on the 15th inst. the degree of M.A. was conferred upon Professor Dalling.

In announcing this distinction we take the further opportunity to wish Professor Dalling success during the tenure of his Chair and Directorship of the Institute of Animal Pathology. Now that Cambridge has become linked with the teaching of veterinary science, Professor Dalling will have an even greater sphere of influence.

. . . . .

Appointments.—Following the appointment of Mr. E. A. Gray, M.R.C.V.S., to the veterinary staff of the East Anglian Institute at Chelmsford, Mr. J. A. J. Venn, M.R.C.V.S., D.V.S.M., has been appointed Assistant Veterinary Advisor at the Harper-Adams College.

. . . . . .

Forthcoming Marriage.—We regret that in the announcement, which appeared in our last issue, of the engagement of Mr. K. G. D. Evans, M.R.C.V.S., to Miss Olive Ricks, the latter's surname was erroneously given as Rocks.

* * * * *

OBITUARY

R.C.V.S. Obituary

Farrell, Gerald Henry. Graduated London, May 16th, 1890. Died October 12th, 1937; aged 82 years, at Bournemouth.

. . . . .

Dr. S. F. Tolmie

A Veterinarian Premier

The death is announced from Vancouver of the Hon. S. F. Tolmie, LL.D., a veterinary surgeon by profession, who was a great figure in Canadian politics and who was Federal Minister of Agriculture and afterwards Premier of British Columbia for five years.

Dr. Tolmie was a successful breeder of cattle and not less successful as Federal Minister of Agriculture. In that office he was active in the agitation for the British embargo on Canadian cattle, which was finally enacted by Parliament in 1922. He won the affection and respect of Parliament and in due course, having carried British Columbia for the Conservatives, became Premier of the Province.

"Simon Fraser Tolmie was born at Victoria, B.C., on January 25th, 1867," states *The Times*. "His father, William Fraser Tolmie, was a Scots doctor who went out to Fort Vancouver, Washington, in 1832, as physician to the Hudson Bay Company, and his mother, Jane Wark, belonged to one of the oldest pioneer families in British Columbia. Through her, some Indian blood, of which Tolmie was always proud, ran in his veins. From Victoria High School, Tolmie was trained at the Ontario Veterinary College, Toronto. In due course he became known as the most competent veterinary surgeon on the Pacific Coast, and was appointed Chief Inspector of the Dominion Government's Health of Animals Branch for British Columbia. He also had a farm on the outskirts of Victoria and attained great success as a breeder of pure-bred livestock. Holstein cattle were his speciality, and he was at different times President both of the British Columbia and of the Dominion Holstein Breeders' Associations.

"Thus Tolmie was a civil servant and if he had had any partisan inclinations they favoured Liberalism, but at the 'Conscription' election of 1917 he contested Victoria as a Unionist and carried the seat by a large majority. In Ottawa he was soon recognised as an authority on agricultural problems, and in 1919, Sir Robert Borden appointed him as Minister of Agriculture. When the Conservative Party was defeated in 1921, it is said that Mr. Mackenzie King, knowing his Liberal past, invited him to continue in office. Tolmie, however, had thrown in his lot with the Conservatives and became the chief critic of the Government's agricultural policies. In 1923 he was appointed Dominion Organiser for the Conservative Party. He resumed his old portfolio during the short-lived Meighen Ministry of 1926, and survived the Conservative débâcle of that year.

"In 1927 he was elected, by acclamation, leader of the Conservatives in British Columbia, but accepted only on condition that he should continue to hold his seat in the Federal Parliament until the dissolution in the Province. In 1928 he had the satisfaction of bringing the Conservative Party in the Province back to power after a dozen years in the wilderness, his personal popularity with the farming community being a powerful factor in the victory. He formed a good working Cabinet, holding himself the portfolio of agriculture and later that of railways. His administration was marked by the passing of the Security Frauds Prevention Act, which has done much to stabilise the development of the mining industry within the Province, and by the negotiations with the Federal Government which eventually resulted in the return to the Province of the Railway Belt Lands within the Peace River Block. These lands, consisting of some 12,000,000 acres, were originally alienated by the Province to the Dominion of Canada in consideration of the building and completion of the Canadian Pacific Railway to the Pacific coast. This agreement settled a controversy of some 50 years' standing. He was defeated in the election of 1933, and returned to Ottawa in 1936 as member for Victoria.

"Tolmie was one of the real characters of Canadian political life. In Parliament he had a breezy style of speech which he flavoured with homely rural metaphors, and some of his aphorisms acquired more than transient fame. In the course of his duties as a veterinary official he visited every nook and corner in British Columbia and Alberta, and few men were so familiar with their topography and problems. He had also accumulated a rich and varied store of experiences and his natural gifts as a raconteur

made him the best of company. In outdoor sports he was keenly interested, especially in horse racing, riding and ice-hockey, also in boxing and wrestling. He was the soul of hospitality, and many visitors to his home on Vancouver Island have happy memories of his kindness. He married in 1894, Annie Harrop, daughter of Mr. T. K. Harrop, of Victoria, B.C. She died in 1933, leaving two sons and two daughters. He was a member of the Pacific and Union Clubs in Victoria, and of the University Club at Ottawa."

. . . . .

Lord Rutherford

The scientific world mourns the loss of Lord Rutherford, O.M., F.R.S., the eminent experimental physicist, who died at Cambridge on Tuesday last. Born in New Zealand in 1871, in his university career at Canterbury College, Christchurch, he showed such outstanding ability that he was awarded an 1851 Exhibition scholarship and came to Cambridge to work under Professor J. J. Thomson, whose researches on the passage of electricity through gases were then in full swing. Thus began the series of researches on radioactivity which stand high among the great enquiries in scientific history, the greater part of this work being done at McGill University, where he was appointed to the McDonald Chair of Physics in 1898.

In 1907 Rutherford accepted the offer of the Langworthy Chair of Physics in the University of Manchester. Here he carried on his radioactivity researches, and extended their scope by the inclusion of further brilliant generalisations. In 1919 he was transferred to Cambridge, to fill the Cavendish Professorship, previously held in succession by Maxwell, Rayleigh and Thomson. His activities were mainly devoted to the study of the atomic nucleus, whose existence he had established when he was at Manchester. It was shown by Rutherford that all the observed effects of radioactivity could be explained on one hypothesis and one only: of which the transmutation of the elements was the principal feature. Radioactivity was simply a consequence of the bursting of the atom. In its most violent form this implied the separation of the radioactive atom into two parts, of which one was an atom of the gas helium, and the remainder a new atom, usually also radioactive. In recent years the artificial disintegration of the elements through the agency of various forms of radiation has become a common experiment in the Cavendish Laboratory and in other places where Rutherford's lead has been followed. Wide new fields of knowledge have thus been opened up and exploration proceeds rapidly.

Part of Rutherford's greatness lay in his ability to recognise brilliance; he gathered an incomparable team around him both at Manchester and Cavendish. He organised research at Cambridge under impoverished conditions which amazed foreign visitors, but which are being rectified by Lord Austin's recent great benefaction.

Rutherford, who was knighted in 1914, was created Baron Rutherford of Nelson, of Cambridge, in 1931. He was loaded with honours by scientific societies all over the world. The Royal Society gave him the Rumford Medal in 1905 and the Copley in 1922, and he received the Franklin Medal of the Franklin Institute in 1924, and the Faraday Medal of the Institution of Electrical Engineers in 1930. The Nobel prize for chemistry was awarded him in 1908, and his services to science and the State were recognised when the Order of Merit was conferred on him in 1925. He was President of the British Association at the Liverpool meeting of 1923 and of the Royal Society from 1925 to 1930, and in 1927 he succeeded Sir J. J. Thomson as Professor of Natural Philosophy at the Royal Institution.

Taking a full share in public work, he served on many Government Committees, and in 1930 became Chairman of the Advisory Council of the Department of Scientific and Industrial Research.

* * * * *

LEGAL NOTES

Claim Following Injury to Mare.—At Thirsk County Court, on October 7th, Judge Gamon gave judgment for the plaintiff in a claim for damages following an injury sustained by a mare and the subsequent death of her foal. The case arose out of a collision between a car owned by Harold Tarn, farmer, of Middle Caves, Melsonby, Barton, and a cart drawn by a mare, the property of William Fletcher, farmer, of Manor Farm, Carlton Miniott, near Thirsk, who claimed £35 damages. Liability was admitted by the defence. Mr. A. W. Walker, of Thirsk, appeared for plaintiff and Mr. F. C. Hodgson, of Richmond, defended.

Evidence was given by plaintiff that before the accident the mare, which was in foal, was perfectly sound, but after the accident, in which she was knocked down by the shafts of the cart, she became nervous and refused to back her loads. He valued that animal at £55, but since the accident she was worth only £20. He valued the foal at £15. The foal was weak from birth. He "docked" it when it had been alive a week. Replying to Mr. Hodgson, he said he did not inject anti-tetanus serum but sterilised and disinfected the knife before use.

Mr. W. A. Campbell, veterinary surgeon, of Boroughbridge, said he saw the foal when it was twelve days old. On examination he found symptoms of joint evil. The foal was badly nourished and its death, he believed, was due to joint evil. There was no question of tetanus. Weakly-born foals were often attacked by joint evil, and in this case he attributed the defect to a spinal injury sustained by the mare.

Mr. J. W. Procter, a York veterinary surgeon, who gave evidence for plaintiff, also testified to finding symptoms of joint evil. The mare, too, was not functionally normal in her hind limbs. He added, "I think a man would be very brave to diagnose tetanus on *post-mortem.* It is impossible to diagnose it. The time is during life. The docking would have no effect on the health of the foal."

Mr. W. H. Wood, a North Riding County Council veterinary officer, who also examined the mare and foal, said he did not find her nervous of motor traffic and she showed no signs of lameness in the back while out of harness.

Disagreeent was expressed by Captain H. M. Paul, M.R.C.V.S., of Northallerton, who said that he examined the carcase of the foal and found a retracted membrane halfway across the eye, which was a classical symptom of tetanus. He added that it was asking for trouble to dock a foal when it was not strong enough. In his view, tetanus had arisen as a direct result of docking. He found no signs of joint evil. The mare, he contended, was not suffering from a back injury. Her refusal to back into shafts was on account of stifle joint trouble, which could not have been caused by the accident.

Recalled, Mr. Procter said the retracted membrane was not an infallible sign of tetanus when the animal was dead. It was infallible in life, but it was by no means confined to tetanus in death.

Agreement with this view was expressed by Mr. Wood.

Summing up, the Judge said that he thought there was no doubt the foal had been born in a weak condition as a result of the accident to the mare. He did not believe the foal had died of tetanus.

. . . . . .

Sheep Slaughtering Offences.—At Barnsley Borough Police Court, Leonard Rushforth, butcher, of Gilroyd, appeared on two summonses of slaughtering a sheep otherwise than instantaneously slaughtering it by means of a mechanically operated instrument, and also for failing to give notice of time and place of slaughter to the Barnsley Borough Council.

Mr. D. J. Osborne, Deputy Town Clerk, prosecuting, said on August 18th an assistant sanitary inspector, Francis Shepley, visited a slaughterhouse in Peel Street, where he saw the carcase of a sheep. He examined the head of the sheep and at once saw that the animal had not been killed by means of a mechanically operated instrument, as demanded by law.

After giving details of the Act, which said sheep must be killed by means of a mechanically operated instrument, Mr. Osborne said Shepley communicated with Mr. Mellor, the chief sanitary inspector, who also visited the slaughterhouse and examined the sheep's head. Mr. Mellor ascertained that the head belonged to a sheep killed by Rushforth. He pointed out to Rushforth that the sheep had not been killed by a mechanically operated instrument as there was no hole in the skull. The defendant, however, said that it had and pointed to a depression in the sheep's skull. He (Mr. Osborne) would call evidence to prove that it was natural depression, as the brain had not been touched or the wool disturbed.

Continuing, Mr. Osborne said the second charge of failing to give notice of time and place of slaughter, having regard to circumstances in the town, was particularly serious. Rushforth told Mr. Mellor that he had killed the animal at about mid-day, but Fairclough said it was nearer two o'clock. The Act said that no one must slaughter an animal without giving at least three hours' notice to the local authority. That particular slaughterhouse was licensed for slaughtering between the hours of two and five, but not before two o'clock.

In evidence, Mr. Shepley stated that in conversation Rushforth said he had shot the sheep and pointed to a natural depression in the skull, saying that was the hole where it had been shot. Eventually the head was split open and it was seen that the brain had not been touched. Witness said he had seen a large number of sheep killed by the mechanically operated instrument and there were always traces left after they had been killed by that method.

Supporting evidence was given by Mr. Mellor, Chief Sanitary Inspector, and after the magistrates had examined three sheeps' heads, showing different holes made by humane killers, evidence was given by Mr. P. McCann, veterinary surgeon, who said that the sheep had been killed without the use of a gun.

Rushforth said he was in the slaughterhouse alone when he killed the sheep. He tied its legs together and then shot it. It would be about three o'clock when Shepley came to the slaughterhouse and after looking at the sheep's head he went to fetch Mr. Mellor. As to not informing the Corporation of the time he intended to kill the sheep, he said that he did not think he was responsible as he was not the occupier of the slaughterhouse. He added that he had been a butcher for over 40 years.

The Bench found the charges proved and fined defendant 40s. and costs for not killing the sheep with a mechanically operated instrument, and £15 and costs for failing to inform the Corporation of the time and place of slaughter. On default he would be committed to prison for two months.

. . . . . .

HUNTERS' IMPROVEMENT SOCIETY

Sir Robert Spencer-Nairn, Bart., presiding at a well-attended meeting of the Council of the above Society held in London, intimated that the next Hunter and Thoroughbred Show will be held on March 1st to 3rd, 1938, at the Royal Agricultural Hall, London, N.

Prize Schedule.—The schedule of classes and prizes for the hunter section of the show was agreed to. Approximately £900 will be awarded in 17 classes covering young stock of all ages and ridden hunters, with three classes for jumpers. A new class is to be introduced for two or three-year-old colts, entered in, or eligible for, the General Stud Book, likely to make premium stallions, the prizes in this to be £15, £10 and £5.

Veterinary Examination.—It was decided that an exhibitor at the 1938 show preferring to have his animal examined beforehand can do so provided one of the Society's approved veterinary surgeons is employed within 14 days of the show. A certificate of soundness obtained in this way will be exchanged for a steward's pass to enable the exhibit to enter the judging ring.

Hunter Judges.—For the use of Show Committees the Council drafted a list of recommended judges for hunter breeding, riding and ladies' classes, copies of which will be available shortly.

Country Show Awards.—During the past season, the Society awarded 30 gold and 102 silver medals together with £54 in produce premiums—representing a total cash value of £212. It was decided to renew the offer of these at associated shows in 1938.

R.A.S.E. Show.—The Council approved the classes and prizes to be provided in the hunter breeding and riding classes at the Royal Show next year, expressing the hope that as many members as possible will support these so that a representative display of hunters may be seen.

Premiums for Thoroughbred Stallions.—Lord Digby (Chairman of the Stallion Committee) reported that premiums for thoroughbred stallions to travel prescribed routes in England, Scotland and Wales, in 1938, will be offered on similar lines to former years. Full details of these will be available in the near future.

Foaling Results, 1937.—The Council noted with regret that despite five applications, some mare owners had not yet reported the result of the service of their mares by premium stallions. To date, 4,485 returns had been received in respect of 4,549 mares served in 1936—indicating the birth of 2,250 foals compared with 2,211 last year.

Service Returns.—In 1937 the 64 premium stallions selected had served 4,480 mares (an average of 70) compared with 68 stallions which last year served 4,549 mares (average 66·90) and 68 stallions which in 1935 served 4,475 mares (average 65·81).

NATIONAL HORSE ASSOCIATION

Major H. Faudel Phillips (President) presiding at a Council meeting of the National Horse Association reported the election of a record number of new members, 172, compared with that established at the last meeting, 128.

The Council were pleased to learn of the affiliation of the reconstructed British Show Hack and Cob Association to whom will be granted an official representative on the Council.

Approved Riding Schools and Stables.—The Council considered the fact that one or two of the schools that they had approved had not kept up the standard which they revealed at the time of inspection. It was decided that a notice should be sent to the proprietors of approved riding schools and stables pointing out the need for keeping up the standard, that they may again be visited by the Association's inspectors, and that this action is in the interest of the riding schools as a whole so that there shall be no risk of the schools individually or collectively being discredited.

Railway Rates.—It was agreed to make representations to the Railway Clearing House urging that foals accompanying mares to shows should be carried without charge, or at least at a reduced rate, as in the case of mares sent forward for service purposes accompanied by a foal which they are suckling. As matters now stand a foal accompanying a brood mare to a show is charged for as well as and at the same rate as, the dam.

British Jumping.—Captain J. E. Hance addressed the meeting as to the position of British Army officers participating in jumping competitions in this country and abroad. The Council agreed that as matters are at the moment it is very difficult for such officers to maintain the high standard expected of them, and urged that every facility should be afforded to them so that the standard of British jumping may bear favourable comparison with that of foreign officers against whom they have to compete. The Council felt that it was very bad for the prestige of the British Army if its officers have to compete under any handicap; and they bear in mind that in the case of the majority of foreign countries, officers and horses are given every opportunity and often a subsidy, to ensure that their standard of jumping will be of the highest attainable.

Medals Awarded.—During the show season the following medals had been awarded: 49 silver medals for the best child's pony to be ridden by a child under 14 years of age, 14 silver medals in shoeing competitions for the best-prepared foot, nine silver medals to farriers and nine bronze medals to owners of the best-shod horse in agricultural classes at certain shows.

Horse Owners' Reference Book.—Preliminary arrangements for the next issue were discussed. The Secretary would be glad to have information of any dates fixed for events in which horses can take part, *viz.*, horse shows, gymkhanas, parades, point-to-points, hunter trials, etc., for inclusion in the 1938 edition. It was agreed again to include the county list of riding schools and that additional details of the facilities available at each riding school should be included. Forms would be sent out in December to all the riding schools on the Association's register.

VETERINARY BRANCH AT THE WAR OFFICE

In an announcement made on Wednesday last the War Office say: "Because of the steady fall in the number of horses used in the Army, it has been decided to reduce the status of certain branches. The veterinary branch at the War Office will become a brigadier's appointment instead of one for a major-general as Director-General, Army Veterinary Services. The new head will be Director, and the officer selected is Colonel C. A. Murray. He will be given the temporary rank of brigadier while so employed."

* * * * *

CHEMOTHERAPY FOR VIRUS INFECTIONS

An investigation of the way in which sulphanilamide affects the multiplication of haemolytic streptococci is described by a group of Sheffield workers* in the *Lancet*, of October 2nd, and made the subject of comment later in the same issue, as follows: "It is interesting to find these workers recording, *inter alia*, that the drug may at first actually stimulate the growth of streptococci in the blood. This stimulation is followed by depression, and they discuss the action of the remedy in the light of their observations that sulphanilamide is relatively soluble in the fatty envelope of the cocci and that (in the rabbit) it seems to increase the phagocyte activity of reticulo-endothelial cells and the production of polymorphs by the bone-marrow. The number and variety of organisms that are said to be attacked by sulphanilamide and more or less related drugs is so great that it hardly comes as a surprise to find it stated that they are also active against a virus disease. Rosenthal and his colleagues† recall that Levaditi found prontosil ineffective against herpes virus infection in rabbits and lymphogranuloma inguinale in a monkey, and in their own experiments with mice they have had no success with the virus of encephalitis (St. Louis type) or of influenza. On the other hand, they report that it has a definite protective action, in large doses, against the virus of lymphocytic choriomeningitis; and this they believe to be the first instance of chemotherapeutic activity of a drug against a virus disease. It is noteworthy that prontosil soluble, as well as sulphanilamide and other related compounds not containing an azo linkage, proved inactive against the virus, though more potent against bacteria. It is hoped that this specialised activity of red prontosil may point to ways of making progress in the chemotherapy of viruses."

*Finklestone-Sayliss, Paine, C. G., and Patrick, L. B. *Lancet*, October 2nd, 1937, p. 792.

†Rosenthal, S. M., Wooley, J. G., and Bauer, H. *Publ. Hlth. Rep. Wash.*, September 3rd, 1937, p. 1211.

* * * * *

"SLAUGHTERHOUSE PRACTICE AT HOME AND ABROAD"

Under the auspices of the Royal Sanitary Institute, the "Benjamin Ward Richardson Lecture" (founded by the Model Abattoir Society) will be delivered at the Institute, 90, Buckingham Palace Road, S.W.1, at 5.30 p.m. on Tuesday, November 9th. The lecturer will be Dr. W. A. Lethem, Medical Officer, Minister of Health, and the subject "Slaughterhouse practice at home and abroad: a comparison between the systems of administration of different countries, the methods of meat inspection and the practice of humane killing." Sir George Newman, Vice-President of the Institute, will occupy the chair. Those proposing to attend this lecture are requested to notify the Secretary of the Institute not later than November 5th.

THE LIVESTOCK COMMISSION

The personnel of the Livestock Commission has been completed by the appointment as members of Mr. R. N. Jones, formerly the Superintending Livestock Officer for Wales for the Ministry of Agriculture and Fisheries, and Dr. J. M. Newnham, Town Clerk, of Croydon, who is now retiring from that office.

The Livestock Commission is a permanent body which has various specific duties assigned to it under the Livestock Industry Act, 1937. In addition, it is charged with the duty of keeping generally under review the production, marketing and slaughtering of livestock, the preparation for sale of the products of the slaughtering of livestock and the marketing, consumption, treatment and use of such products. The Chairman is Sir John Chancellor.

* * * * *

"NATIONAL THIRST FOR MEDICINE"

Sir Kingsley Wood, the Minister of Health, in an address to the twenty-fifth annual meeting of the National Association of Insurance Committees, said that he was concerned at the number of bottles of medicine which were being prescribed to quench what might be described as a national medicinal thirst. In the last twelve years the number of prescriptions issued in England and Wales had increased from 43,800,000 to 66,000,000, and the total cost from £1,754,000 to £2,240,000.

Some part of the increase might be due to resort by insured persons to their doctors at an earlier stage of illness, but the greater part was the result of the growth of the "bottle" habit. It was not a satisfactory state of affairs, and how to deal with the matter was not easy to discover. Cases of apparent excessive prescribing were being brought to the notice of the doctor at an earlier state, and the British Medical Association was co-operating with the Ministry in certain investigations which it was hoped would contribute towards a solution of the problem.

* * * * *

THE SOUTH AFRICAN NATIVE AND "USELESS MEDICINES"

In the course of a plea, published in the *Natal Mercury*, for the protection of the Natives of South Africa from the "disingenuous exploitation of their fervent belief in medicine," Lieut.-Colonel Wakefield Rainey, O.B.E., F.R.C.V.S., writes: "A well-organised veterinary service in South Africa takes care that the owners of domesticated animals are fully informed of the folly and danger of charlatanism as regards oxen, sheep, horses, pigs and goats. Indeed the spread of such education in South Africa may be regarded as the greatest achievement of what is probably the best State veterinary service in the world. Why cannot the Bantu be similarly protected, and why should we not demand that in this respect the Bantu shall be placed on the same level as the domesticated animals?

"It should be unnecessary to point out that the under-fed and poverty-stricken Native cannot really bear the financial burden of existing medical conditions. He should, by force if necessary, be protected from himself in this respect so that the money he now wastes on useless medicines may be applied to his better nutrition and other essential environmental uses."

TOXOPLASMA AND PROBLEMS OF IMMUNITY

Commenting that the subject of the toxoplasma is hardly one with which the majority of medical men are familiar, a leading article in the *British Medical Journal*, of August 14th, states that it is a not unimportant one, for these parasites occur quite commonly as latent infections in several experimental animals—rabbit, guinea-pig, mouse—introducing a complication in transmission experiments; and they have occasionally been reported as causing disease in man.

"It is true that most of these reports have been unconvincing, but Bland's evidence[1] that toxoplasma are the cause of glandular fever cannot be so lightly dismissed and certainly calls for further investigation. Toxoplasma are small oval or pyriform parasites about 6 $\mu \times 3$ μ in size, with definite nucleus and protozoan appearance. They have been described in a number of species of birds, including the sparrow, *Passer domesticus*, and have been observed in the rabbit in Brazil by Splendore[2] and by Nicolle and Manceaux[3] in the African gondi, a small mammal of the desert. As already indicated, their occurrence in laboratory animals has been noted by several workers, some of whom have made these parasites a subject of special study (Levaditi *et al.*[4]). Despite this the taxonomic position of toxoplasma remains obscure, and, apart from saying that they are intracellular parasites most commonly found in the liver and spleen and that they can multiply by longitudinal division, not very much is known.

"The most recent addition to the literature of this subject is a short article by A. B. Sabin and P. K. Olitsky.[5] These workers encountered toxoplasma in the course of their investigations on viruses, and, struck by the fact that many of the problems presented by the study of these highly organised parasites are very similar to those met with in the investigation of filterable viruses, they decided to study toxoplasma more closely. Perhaps their most interesting observations and comments concern the question of immunity to these parasites. They observed, as did Bland, that the inoculated monkey develops a febrile not-fatal illness, recovery from which is associated with immunity to reinfection. They further noted the presence of neutralising antibody in the blood, the test for which consisted of making mixtures of serum and a suspension of toxoplasm-containing tissue and injecting it intracerebrally or intraperitoneally into mice or intradermally into rabbits. It will be recalled that a year or two back Sabin[6] published a series of papers in which he claimed to show that virus and neutralising antibody did not unite *in vitro*, and concluded that the function of neutralising antibody was not to unite with the virus but with the susceptible tissue cells, which it protected in so doing. He further suggested that the antigen responsible for the production of neutralising antibody was not a component antigen of the virus but the product of the tissues of the infected host. According to Sabin the mechanisms of immunity to a virus and to a bacterium differed fundamentally. This view is now supported by experiments made with toxoplasma. Sabin and Olitsky find that in neutral mixtures of immune serum and toxoplasma the parasites undergo no agglutination or

[1] *Brit. J. exp. Path.* (1931.) **12**. 311.
[2] *Rev. Soc. sc. Sao Paulo.* (1908.) **3**. 10.
[3] *Arch. Inst. Pasteur Tunis.* (1909.) **2**. 97.
[4] *Ann. Inst. Pasteur.* (1929.) **43**. 673.
[5] *Science.* (1937.) **85**. 336.
[6] *Brit. J. exp. Path.* (1935.) **16**. 70, 84, 158, 169.

lysis even after several hours' incubation, and that the toxoplasma recovered from such mixtures by centrifugation and freed from serum are fully infective. They further draw attention to the solid immunity which may be found in recovered rabbits, despite the fact that little or no neutralising antibody is demonstrable in their serum, an immunity which they consider to be solely an affair of the tissues.

"It may be that a true tissue immunity unassociated with antibody does occur. Possibly the immunity to the virus of poliomyelitis may be of this nature, and the 'interference phenomenon' demonstrated by Salaman[7] in the case of the X virus of potato and by Findlay and MacCallum[8] with yellow fever virus is probably an example of a tissue immunity. But the mere inability to demonstrate free neutralising antibody in the blood is not sufficient reason for assuming the existence of a pure tissue immunity. And as far as the union of virus and neutralising antibody *in vitro* is concerned might it not be that an optimum balance between antigen and antibody was necessary for the demonstration of this union? This emerges clearly from the experiments of M. H. Salaman,[9] which demonstrate that union between vaccinia virus and its neutralising antibody does occur *in vitro*, but that this might easily be missed unless the correct absorbing dose of antigen were used. Furthermore, it would seem wise before drawing comparisons between the action of protective antibody on viruses and on bacteria to make quite sure what really does take place in the latter case, for recent work by Enders and Shaffer[10] has shown that what some have thought to be phenomena peculiar to viruses and their antisera can be demonstrated equally well with Type III pneumococcus and its antiserum."

[7] *Nature.* (1933.) **131**. 468.
[8] *J. Path. Bact.* (1937.) **44**. 405.
[9] *Brit. J. exp. Path.* (1937.) **18**. 245.
[10] *J. Immunol.* (1937.) **32**. 379.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

A SETTLED ACTION

To the Editor of the Veterinary Record

Sir,—I have been asked why I settled the recent law action brought against me by the P.D.S.A. in accordance with the statement made in court on my behalf rather than have the action to be tried out at length before a jury.

I desire it to be known that I acted solely on the advice of my legal advisers who included eminent counsel and this advice was that as the action appeared to have arisen out of a certain amount of misunderstanding an honourable settlement removing this misunderstanding was to be preferred to a law suit which could have no certainty and must engender bitterness and cause heavy expense probably outweighing any advantage to be gained even by the successful defence of the action.

I felt bound to act upon the advice given to me and I think that in the circumstances I could not do otherwise.

I am, Sir,
Your obedient servant,
J. Willett.

* * * * *

ROYAL VETERINARY COLLEGE: OPENING OF THE NEW BUILDINGS BY H.M. THE KING

To the Editor of the Veterinary Record

Sir,—Owing to the very limited space in the Hall of the College the Governors have reluctantly been compelled to restrict the invitations to the opening ceremony by H.M. the King to official representatives of the several professional bodies. I feel, however, that there must be many past graduates of the College and perhaps other members of the profession who would wish to see the new buildings and I am therefore arranging to have the College open for inspection on the afternoon of Wednesday, November 10th, from 2.30 p.m. onwards for that purpose. Tea will be served at 3.30 p.m. and Commemoration Brochures will be provided for our visitors.

Yours faithfully,
J. B. Buxton.

Royal Veterinary College and Hospital.
Great College Street,
Camden Town,
London, N.W.1.
October 18th, 1937.

* * * * *

THE MINISTRY'S QUARANTINE STATION: A CORRECTION

To the Editor of the Veterinary Record

Sir,—It has been pointed out to me that, in my article "The Combating of Animal Diseases and the Improvement of Stock in Empire Countries" which you reprinted, I have made a statement which is incorrect. As a result, some anxiety may be caused in the minds of importers of stock, and others in Dominions and Colonies.

I referred, in the article, to the quarantine station provided at the London docks, by the Ministry of Agriculture, for animals proceeding overseas. I stated that the immunisation of cattle against certain tick-borne diseases was carried out at this station with a virus produced by strains from various sources.

The immunisation is carried out at Weybridge and the station at the docks is used for quarantine purposes only. If the immunisation were

undertaken, as I suggested, at the docks, where animals for various territories might be quarantined simultaneously, there might arise some anxiety in the minds of those who advise Dominions and Colonies.

I greatly regret that an unintentional error on my part might be followed by the consequences stated, and trust that the explanation given will cause reassurance where such is needed.

Yours faithfully,
J. Smith.

Kenley,
Surrey.
October 16th, 1937

* * * * *

HYPERINSULINISM AND CANINE HYSTERIA

To the Editor of the Veterinary Record

Sir,—Hyperinsulinism appears to have been first reported as a clinical syndrome by Harris in 1924, and a large number of reports published since then seem to have established the pathogenesis, diagnosis and treatment.

I have been so struck by the close relationship of the symptoms displayed in human cases of that disease to those occurring in our patients in the clinical manifestations of so-called canine hysteria, that I venture to bring the possible relationship to the notice of the profession. I am the more tempted to advance this view because I, and I believe a number of other practitioners, have been treating, perhaps somewhat empirically, these "hysteria" patients of ours, with almost unfailing success, on exactly those lines that are advocated as successfully employed in cases of hyperinsulinism in humans. It is in regulating the diet by reducing the carbohydrate intake and increasing the fat ration that a cure is effected in both cases.

In hyperinsulinism—which is, of course, directly opposed to diabetes mellitus (hypoinsulinism)—it might be supposed, and indeed a superficial knowledge of physiology would make it appear, that more carbohydrate, *i.e.*, more available sugar was required and the fact that sugar will allay an attack (I have given calcium gluconate hypodermically or a saturated sugar solution *per os* with excellent effect in acute attacks) seems to make confusion worse confounded. As an explanation it appears to be established that the diminished carbohydrates and the increased fat check excessive insulin production, and that a high carbohydrate diet will of itself cause an overproduction of insulin with a reduction of blood sugar.

The fact that Green (Hewetson) found a wide variation in blood sugar readings in hysteria cases does not dismiss a diagnosis of spontaneous hypoglycaemia, because, quite apart from the high reading always obtained from an ordinarily nervous or excitable animal donor, in hyperinsulinism there are waves of accelerated insulin secretion similar to the waves of hypophysial secretion observed by Cushing in hyperpituitarism. It appears that a more satisfactory test is the six-hour glucose tolerance test, and that the biochemical analysis of a random and uncontrolled blood sample is of little diagnostic value.

Such testing would, of course, be quite practicable in our patients given adequate research facilities.

Those who will read the published reports of the subject cannot but be impressed with the clinical similarity of the syndromes.

Yours faithfully,
V. Berwyn Jones.

Wonersh,
Guildford.
September 30th, 1937.

* * * * *

TREATMENT OF "PARASITIC HOOSE"

To the Editor of the Veterinary Record

Sir,—The discussion in your columns on "hoose" in calves is a very important one as it shows that the disease is as deadly and as prevalent as ever. My experience is pretty much the same as that of Mr. Pollock: I cannot say I ever saw any ill effects from the use of chenopodium, but I discarded it some years ago as of little use for curing "hoose." Mr. Smythe says he gives m. 4 doses and kills his calves with accumulation of dead worms; then Mr. Pollock says he gives a dose over six times as great with no apparent ill effect. I would suggest to Mr. Smythe that his result would have been the same whatever mixture he had used: when a calf is choked with dead worms that animal is so heavily infested that it will die in any case. From reading Mr. Smythe's paper and the discussion following, it would appear as if the outbreaks in the south are much more severe than we get further north; or is the feeding not so good and the owner longer in seeking advice? I noticed several critics advised putting the calves on to good feeding. We in the north generally find they are already getting everything of the best and rarely can suggest any extras. If stirks six months old, badly fed, and perhaps inclined to be pot-bellied, break out with "hoose" they will, unless caught early, die wholesale whatever the treatment.

None of Mr. Smythe's critics mentioned the old-fashioned fumigation as a cure for "hoose." I am convinced that fumigation properly carried out to-day would save many calves' lives. When injecting calves' windpipes for "hoose," and I come to the heavily blowing calf, I have always a feeling that it is a wrong treatment, but when one starts one generally treats all alike. Given a suitable building for the task I think I can show a greater improvement in a batch of calves, in the course of a few days, by fumigation than by intratracheal injection: certainly there is no danger of choking by dead worms after fumigation as the animal often coughs until it tumbles over. It is wonderful how a weedy calf will stand, for 20 minutes, dense sulphurous fumes that a human being could not stand for two minutes. Another method is to employ quicklime. Scrape the dry top bedding off a box just large enough to hold the animals not too tightly packed, then sprinkle a few shovelfuls of quicklime over the floor, lay dry bedding on the top to prevent the lime burning the feet, and put the animals in for a couple of hours each day. As this is too tedious a process I leave it to the owners to carry out; they often get very alarmed at the terrible coughing and the water pouring from the animals' eyes and mouths. Care should be taken that quicklime is used and not spent lime. Fumigation is less spectacular than intratracheal injection but after all we want to treat the animal, not the owner.

I should like to know just how soon after an intratracheal injection it is safe to repeat the dose.

Yours faithfully,
Wm. A. Campbell.

Boroughbridge,
Yorks.
October 16th, 1937.

PHAGOCYTOSIS TESTS AND BRUCELLA INFECTION

To the Editor of the Veterinary Record

Sir,—I would like to congratulate very heartily Mr. F. W. Priestley on his paper entitled "The Value of the Whole-Blood Phagocytosis Test as a means of determining reactivity to Brucella Infection in Cattle," published in the *Veterinary Record*, October 16th, 1937. There are, however, one or two points which I feel are interesting in this connection.

(1) Priestley has shown that the counts on the same smear may vary by as much as 80 per cent. Were any trials made to show the great variations which presumably occurred in each individual cow?

(2) Was any effort made to determine whether the cattle tested were sub-normal regarding their polymorphonuclear phagocytic powers, due to the presence of intercurrent infections, by such tests as (*a*) Arneth (polynuclear [Ponder and Cook]) count, (*b*) the preparation, staining and examination of blood films for the presence of polymorphs, showing toxic granules, pycnosis and/or vacuolation, (*c*) a differential blood count, or (*d*) a total white cell count?

(3) Was the distance from the farms where the vaccinated and unvaccinated cattle were present to the laboratory approximately the same? In other words, were there vaccinated and unvaccinated cattle in each herd examined?

(4) Did Huddleson and his colleagues use 0·5 per cent. barium chloride in their suspending fluid for the bacilli? If not, was the influence of this on the opsonic index of the blood considered?

(5) Has Priestley's tentative conclusion that the evidence presented does not support the view that phagocytosis of *Br. abortus* by polymorphonuclear leucocytes may be used as a means of detecting susceptible and resistant animals been confirmed on guinea-pigs, where the particular strain of abortus has been shown to be effective on vaccination?

(6) In view of the fact that the average cow weighing 1,000 lb. has approximately 5,000,000,000 polymorphs in constant circulation, does Priestley believe that the one examination of 50 such granulocytes is satisfactory from a statistical point of view?

(7) Finally, in connection with the title, might it perhaps have been a little more correct to refer to "The Value of the 'Polymorph' Phagocytosis Test?"

With renewed congratulations to Mr. Priestley on his most interesting paper.

Yours faithfully,
W. P. Blount.

County Hall,
Lewes.
October 19th, 1937.

* * * * *

THE TRUTH AND A REFLECTION

To the Editor of the Veterinary Record

Sir,—How true is the last remark in your editorial of October 16th, *viz.*, "The day is long past when the young graduate had nothing but general practice in prospect." The worst of it is there is plenty of general practice in prospect but although the harvest is good the labourers are few. A reference to your advertisement columns shows that ten veterinary surgeons want assistants and their prospects of satisfaction are not good when the demand is much greater than the supply.

Yours sincerely,
G. Mayall.

Bolton.

Diseases of Animals Acts
SUMMARY OF RETURNS

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic§ Mange.		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks reported by the Local Authorities.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 16th to 30th Sept., 1937	21	21	—	—	2	2	—	31	28
Corresponding period in									
1936	9	9	—	—	5	5	—	64	45
1935	11	14	6	512	2	2	6	101	60
1934	12	13	2	79	1	2	18	63	21
Total 1st January to 30th September, 1937	530	637	20	4,847	96	136	139	799	483
Corresponding period in									
1936	338	398	5	448	96	238	167	1,460	1,040
1935	261	307	40	10,720	86	172	269	1,478	874
1934	286	325	9	663	103	171	453	1,203	736

Note.—The figures for the current year are approximate only.

§ Excluding outbreaks in Army Horses.